June 24, 1957

PAPER TRADE JOURNAL

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North American Outlook for Pulp Today & Tomorrow

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OIC VALVES | FORGED & CAST STEEL, LUBRICATED PLUG, BRONZE & IRON VALVES

Bolton's BLUE DEVIL Knives save over $185.00 per day in chip production

. . . . . CUT SAWDUST IN HALF

In a large northern pulp mill* records comparing the performance of BOLTON'S NEW BLUE DEVIL HIGH SPEED KNIVES with those previously used show a net saving of over $185.00 a day.

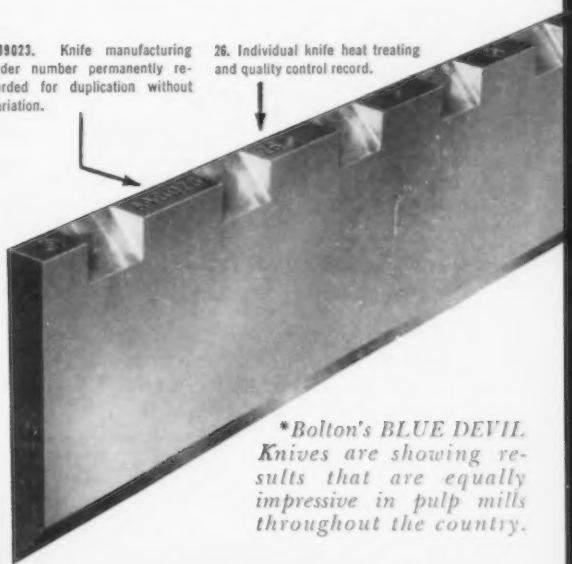
The amount of sawdust was *cut in half* — reduced from 4% to 2%. After 27 grinds BOLTON'S BLUE DEVIL HIGH SPEED KNIVES diminished in width a mere 3/8" — a hard-to-believe figure of .0138 inches per grind — with 1 1/8" of knife life remaining.

CUSTOM CRAFTING MAKES IT POSSIBLE

Money-in-pocket results like these are attained with BLUE DEVIL KNIVES because they are custom crafted to improve individual chipping operations. Manufacturing specifications are prepared *only* after a complete survey of the chipping conditions is made right in your wood room. Provided with these facts Bolton engineers and metallurgists determine metal selection, specific heat treating techniques and other custom processing steps — carefully calculated to fulfill specific chipping requirements and objectives.

A new concept in chipper knife manufacturing is introduced through BOLTON'S BLUE DEVIL HIGH SPEED KNIVES. Users are discovering new efficiency and dollar savings on a wide variety of pulp wood under varying wood room conditions. Custom crafted BLUE DEVIL KNIVES can accomplish the same for you.

How recently has your chipping operation been reviewed? For more information on Bolton's BLUE DEVIL KNIVES, contact *John W. Bolton & Sons Inc., Lawrence, Massachusetts.*

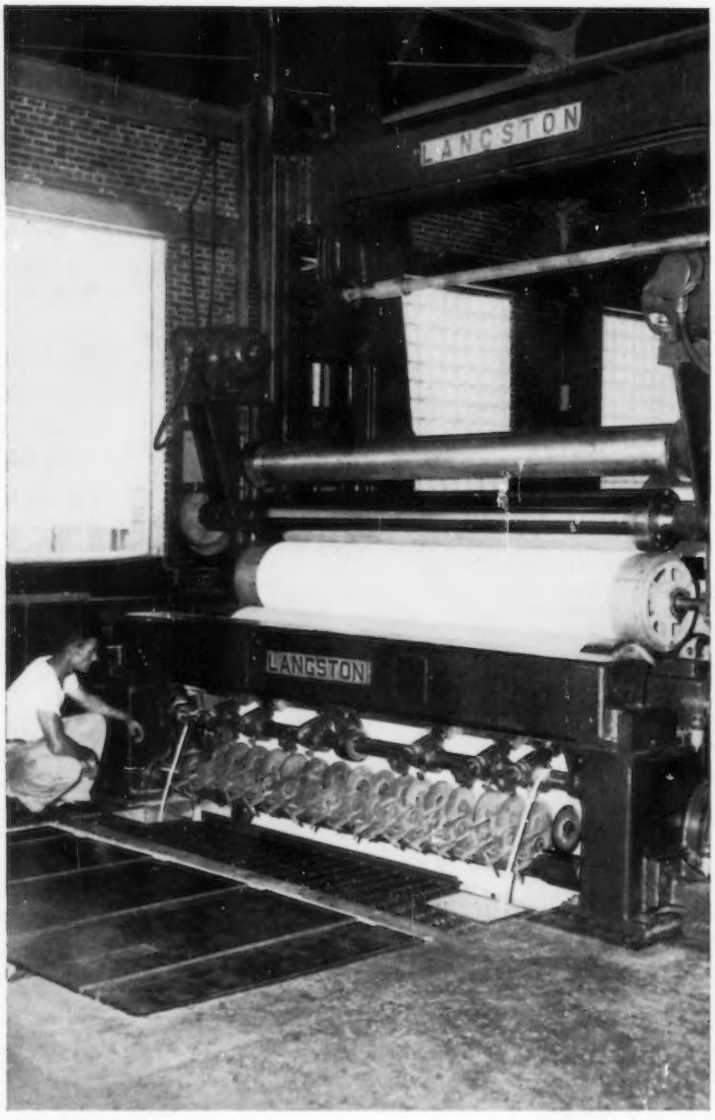

A49023. Knife manufacturing order number permanently recorded for duplication without variation.
26. Individual knife heat treating and quality control record.

Bolton's BLUE DEVIL Knives are showing results that are equally impressive in pulp mills throughout the country.

BOLTON EMERSON

ADE MARK

Langston Slitter & Winder makes 26 perfect cuts per roll



STARTING A ROLL. St. Regis operates this new machine at about 1000 feet per minute. During its first year's operation, the machine will slit and wind roughly *15,000 miles of board.*

LANGSTON SHEAR-CUT SLITTERS keep dust to a minimum. This means cleaner rolls; a cleaner plant; more accurate slitting; and square edges.

Performance report on new machine at St. Regis

"This new Langston winder makes money for us through better rolls and less waste." This remark was recently made by A. F. Downey, plant superintendent at the Pensacola, Fla., paper mill of St. Regis Paper Co. He was referring to the new Langston Slitter & Winder.

The machine's task is to slit heavy board used in the manufacture of milk cartons, butter cartons, paper cups, etc. Before installation of the machine, St. Regis had a major problem with checking and wrinkling—both of which created waste. Today they turn out as many as 26 cuts per roll—all perfect. "I think we could make 30 just as easily," said Mr. Downey.

The new Langston machine is a Model DH with 18-in.-dia. drums and idler rolls and other features specially built in to aid handling of the heavy board. Rolls slit and wound are 92 in. wide and of up to 72-in. dia. Operators praise the machine because it is so easy to operate.

Langston Slitters & Winders are available in a wide range of sizes, types and operating speeds to handle all grades of paper and paperboard. Get complete details. Write for Bulletin No. 220. SAMUEL M. LANGSTON Co., Camden 4, N. J.

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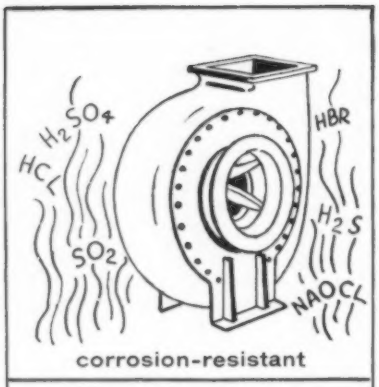

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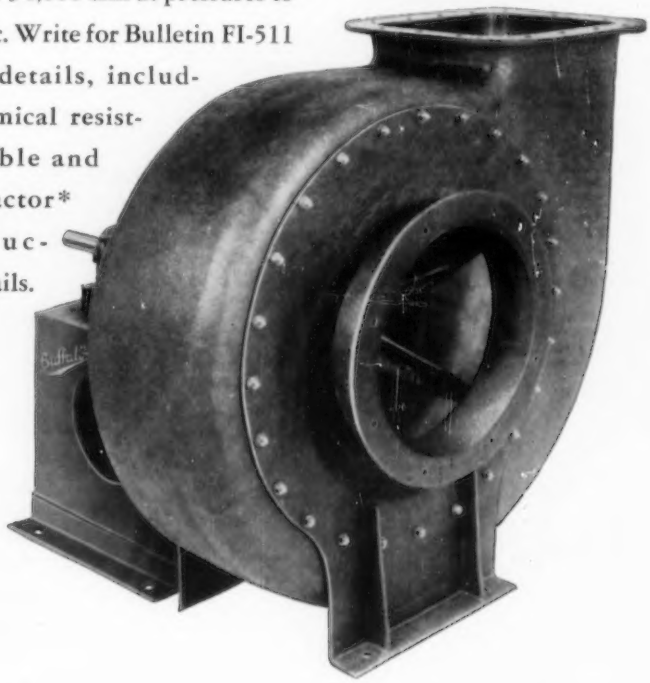

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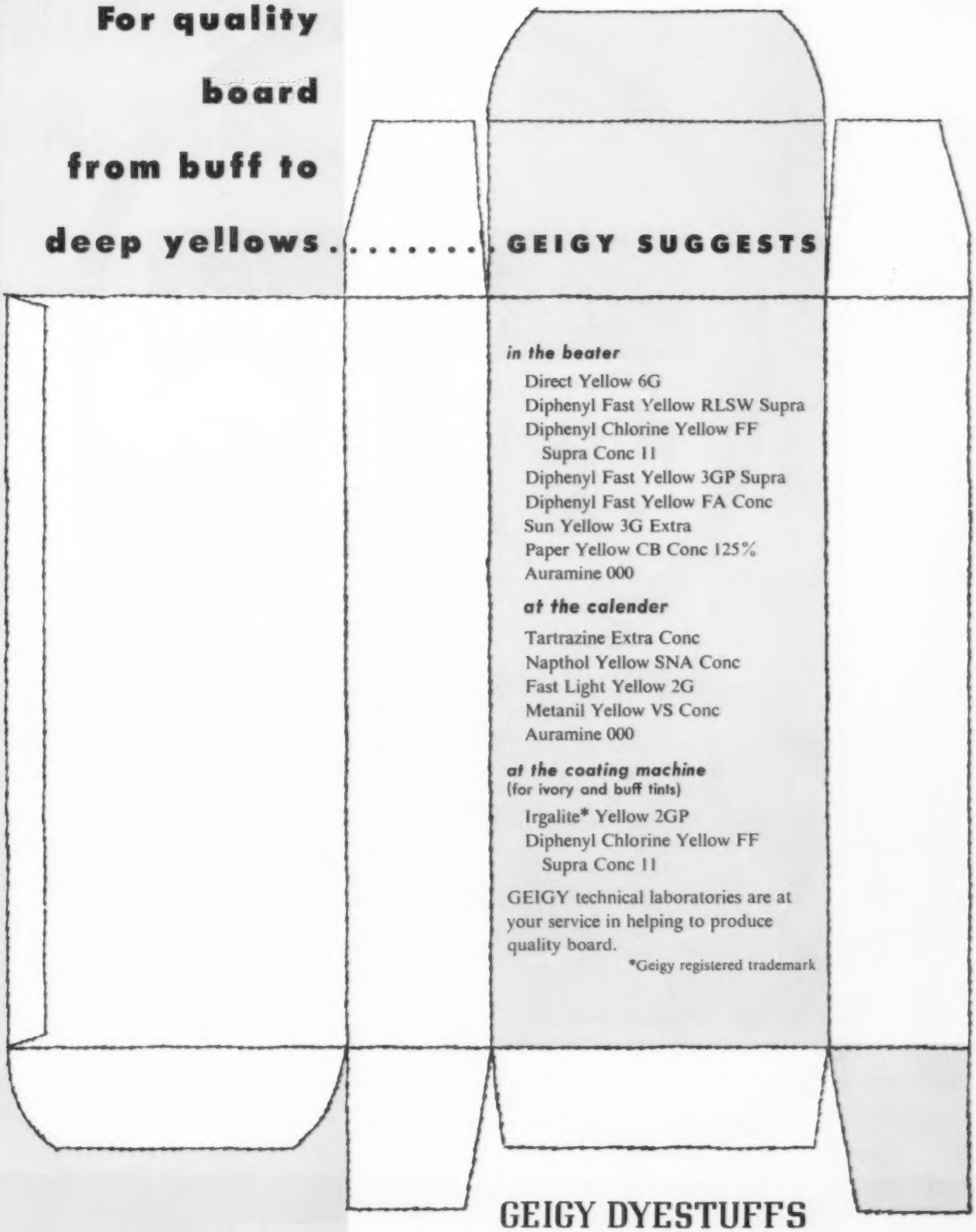

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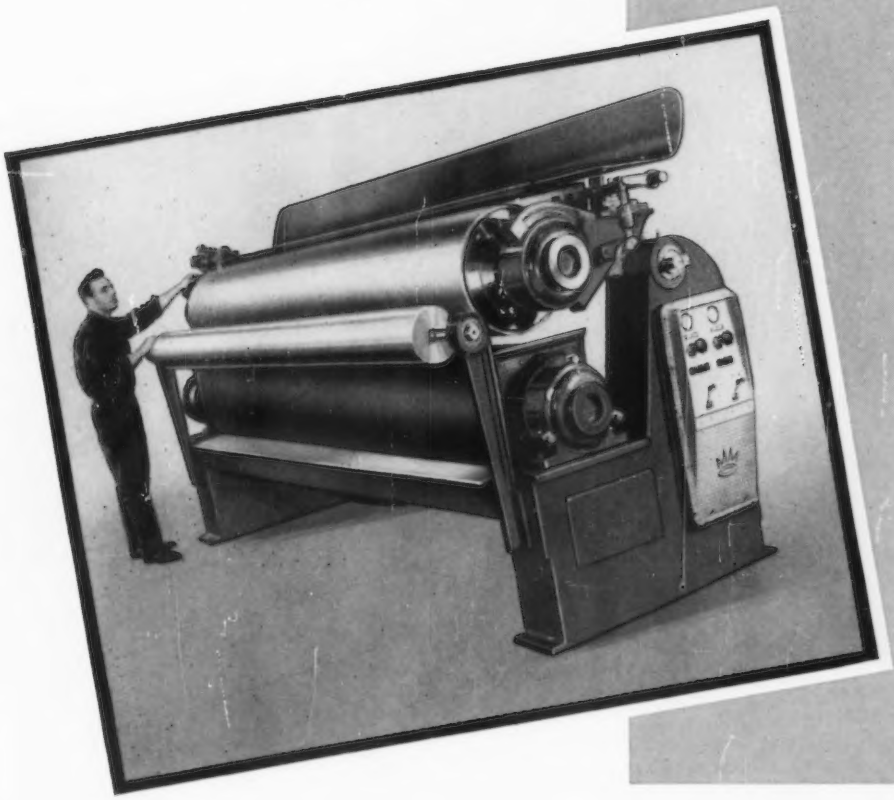

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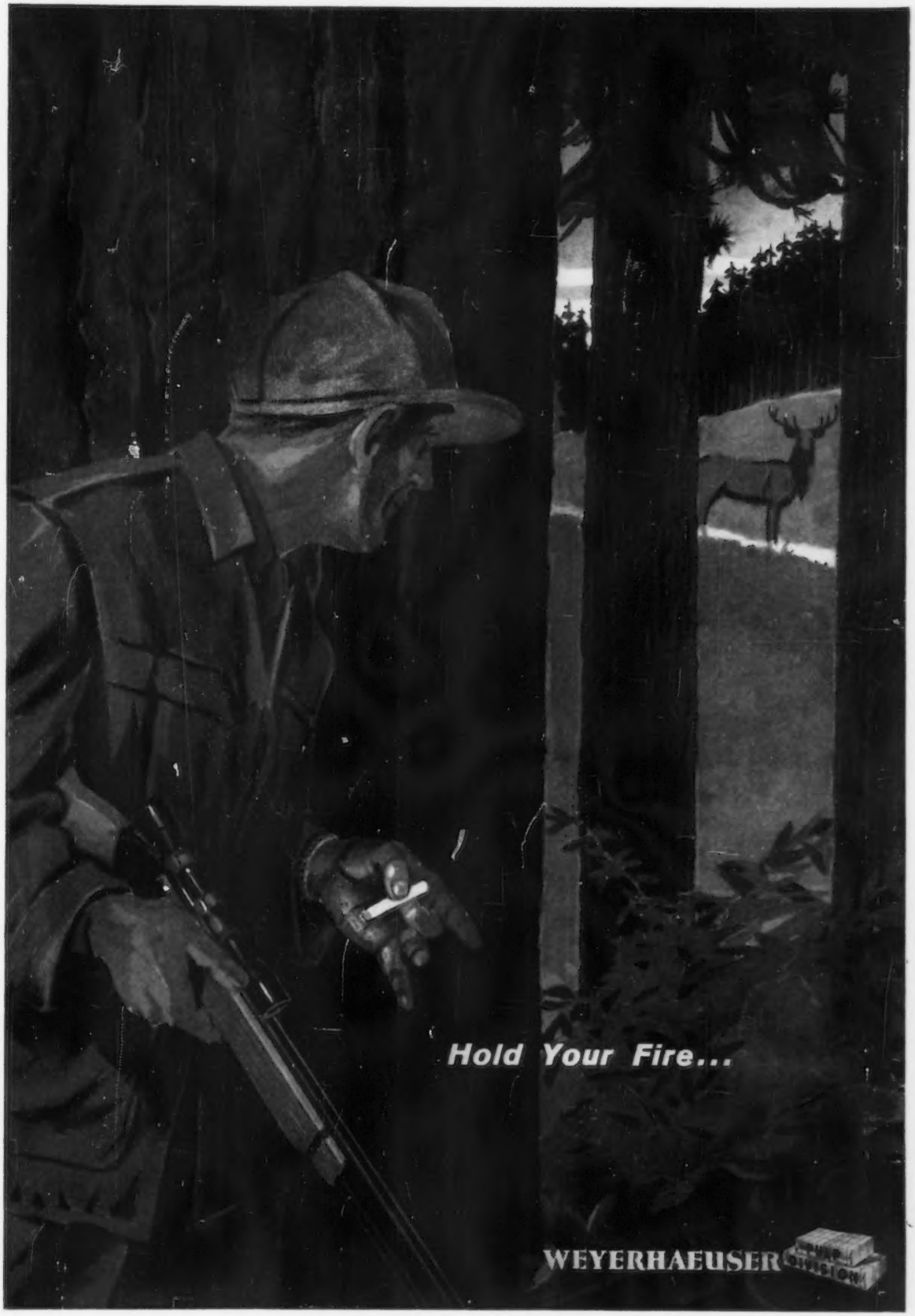
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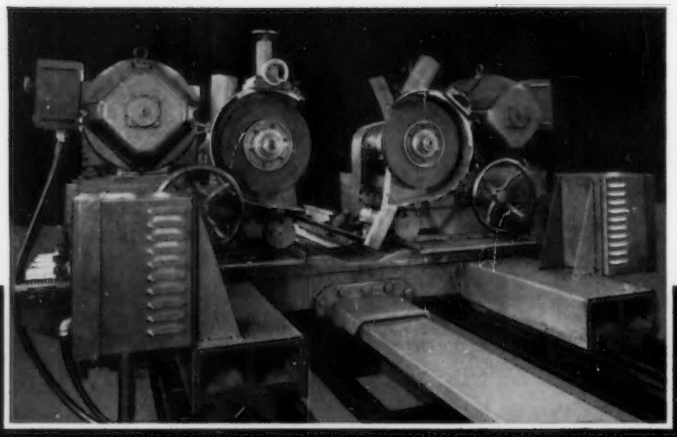

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- Wider and heavier bed and carriage construction.
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- Crowning device . . . newly designed to give full range of desired crown curves.
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- Automatic wheel infeed to compensate for wheel wear on chilled Iron.
- Self-contained wheel spindle . . . forced feed lubrication with oil pressure control.

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It contains sections on first aid and emergency methods—advice that can minimize the effects of an accident should it occur.

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Now, the lowest grade furnish can be used for high quality paper! Even the least expensive stock that has been thoroughly cleaned with d-i LESTOIL results in perfectly finished paper . . . Yes, with d-i LESTOIL you can cut down the cost of raw stock and reap the profits of fine paper.

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USE d-i LESTOIL . . . to launder perfectly (on or off the machine) all types of felts . . . lengthen felt life and use . . . to maintain desired texture.

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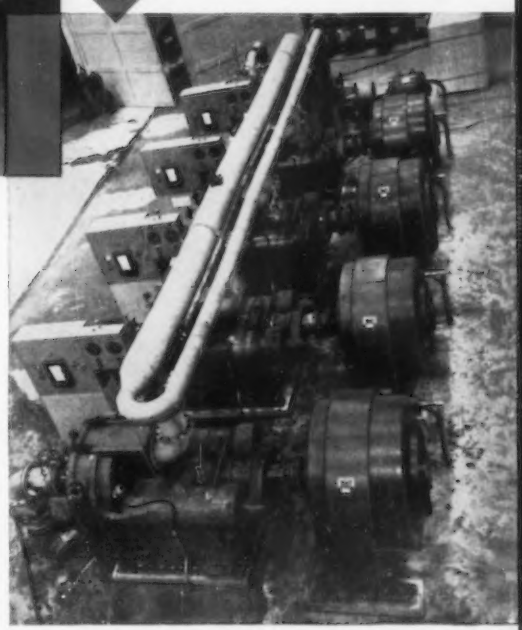
E.D. Jones DOUBLE-D WITH DOUBLE EQUA-FLO EFFECT

The clean, sturdy compactness of the Double-D requires a minimum of floor-space: it can be located almost anywhere.

Four 42" Double-D's in line serve the big new Kraft machine at International Paper's Mobile, Ala., plant. Note simplicity of piping — no special fluming or flow-boxes needed.



Not only does the amazing Jones Double-D refiner do twice the work of conventional refiners — not only does it provide two stages of refining in one pass through the machine — not only can it, if need be, defiber in the first stage and thoroughly refine in the second — but mills where it has been tried and proved for over two years report that it produces stock of equal or better quality than similar machines, even on hard-to-work stock.

Fully-pressurized, economical of floor-space, horsepower and maintenance, the Double-D is very clean in its dealing with stock; and will give any degree of refining from hydration to severe cutting. Has many other advantages. Ask your Jones representatives, or write today for Bulletin EDJ 1083.

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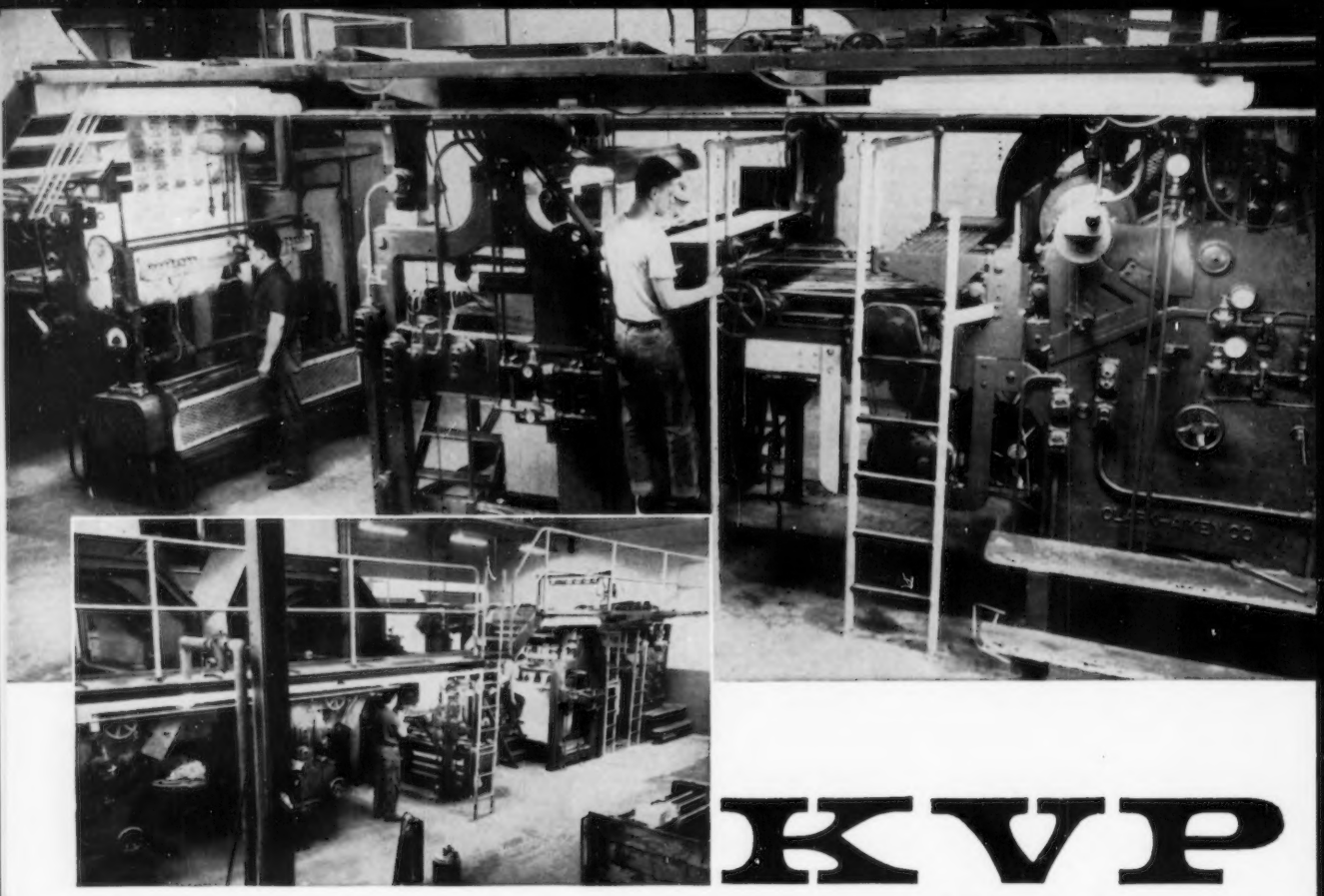

KVP

demonstrates the Speed, Precision and Rigidity of Clark-Aiken Sheeters

In 1950, when The KVP Company, decided it would be possible to eliminate rewinding and greatly simplify handling by hooking a sheeter to the delivery end of its big, high-speed No. 10 four-color rotogravure press, selecting the right sheeter imposed a problem for KVP engineers.

It had to be flexible in its operation to permit synchronization with the press.

It had to be accurate to make each cut of the printed sheet right on the line.

It had to be rigid to withstand the strains of continuous high-speed operation and maintain this accuracy.

Based on their experience with Clark-Aiken Sheeters in the KVP finishing room, they decided that a 52" Type C Clark-Aiken Cutter-Layboy Unit would do the job best.

Wisdom of this decision is borne out in the following report from Dellmore Moffett, Superintendent of Printing of The KVP Company.

> *"The Clark-Aiken sheeter at the end of our No. 10 4-color rotogravure press is valuable to us for three things. First, its rigid construction. Second, its speed. Third, and most important, its accuracy. I am tempted to use the word 'unbelievable' ahead of the word 'accuracy' for it far surpasses our original expectation. We are actually able to control it within the width of a period, or small dot."*

In addition, KVP enjoys the benefits of such exclusive Clark-Aiken design features as

- The "Spiral Shear" Cylinder Knife that makes clean, sharp cuts on any type and weight of stock.
- One-Piece Knife Assembly that automatically maintains alignment when squaring the sheet.
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- Lifetime Tapes which outwear old types many times, practically eliminate stretch troubles.

If you are sheeting paper, pulp, board, film, foil or fabric and require sustained high-speed operation with sustained accuracy and low operating and maintenance costs, Clark-Aiken has a sheeter exactly suited to your needs and can furnish it with a layboy and roll stand exactly suited to your requirements and operating conditions. Clark-Aiken engineers will gladly study your sheeting operations and offer recommendations with actual cost and savings estimates.

THE Clark-Aiken COMPANY

956 SPRINGFIELD ROAD

LEE, MASSACHUSETTS

West Coast Office: 114 East Union Street, Pasadena, Calif.

what

stainless steels

mean to paper-making...

In headers, like the one below, or in digesters, valves, evaporators, screens — *everywhere* in the paper mill — *stainless* is right at home. Here are good reasons...

Freedom from corrosion — Properly selected stainless goes a long way to eliminate the bugaboos of down-time and replacements caused by corrosion failures.

Continuous cleanliness—The smooth, clean surface of stainless means freedom from buildup. And it protects paper from contamination or discoloration.

High strength—Stainless adds strength and rigidity to processing equipment. It's another reason why stainless equipment stays in service longer.

Abrasion resistance — With its tough, abrasion-resistant surface, stainless outlasts other metals scores of times in erosive or abrasive environments.

It all boils down to the vital fact that *stainless* means greater efficiency, higher profits, in paper-making. Can you afford *not* to use stainless? *Crucible Steel Company of America, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.*

Write now for your free copy of Crucible's helpful, 20-page booklet, "Making the Most of Stainless Steels in the Pulp and Paper Industry."

Large stainless steel header fabricated by Artisan Metal Products, Inc., Waltham, Mass.

CRUCIBLE first name in special purpose steels

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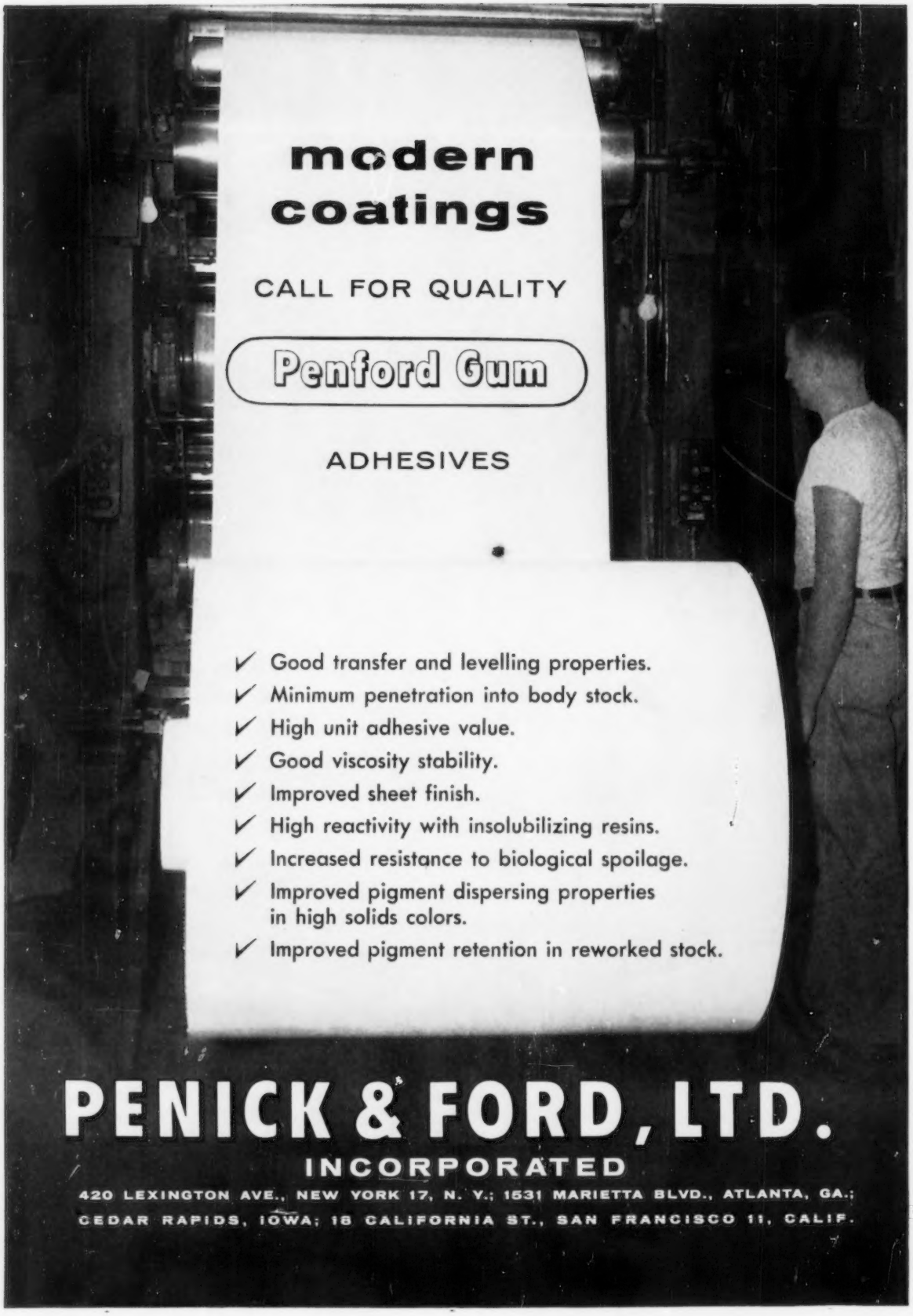
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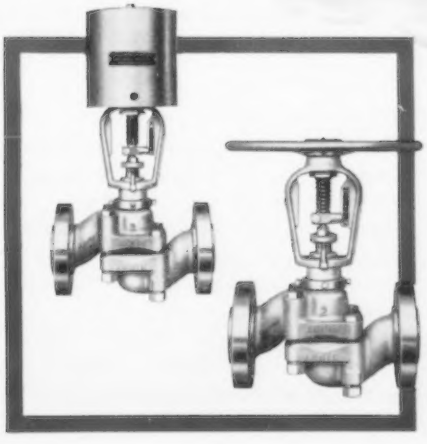


ANNIN VALVES *meet every test of reliability, response and easy maintenance at low cost*

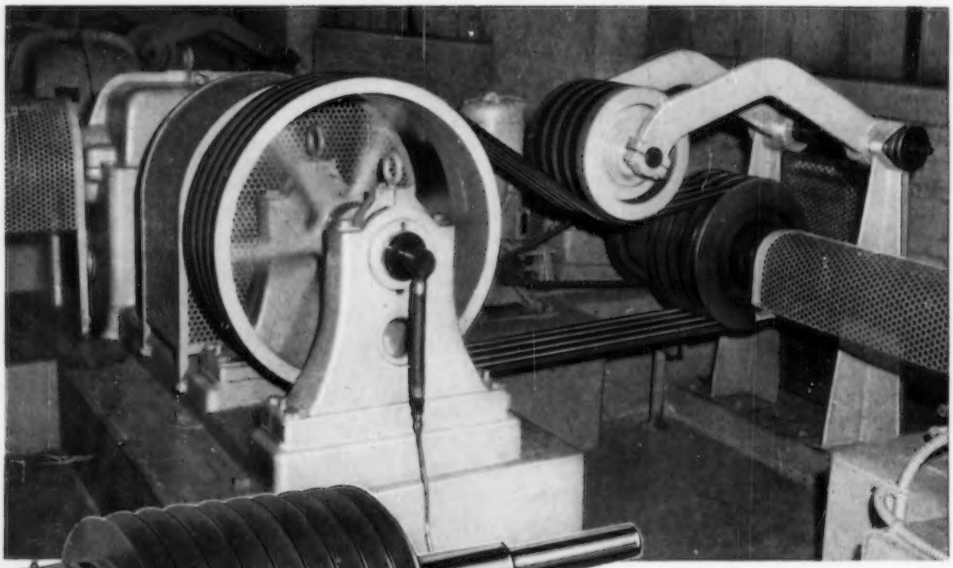
ANNIN VALVES are the only valves that meet the rigorous requirements of the missile program and the exacting demands of the modern process industries in a single standard construction at no premium.

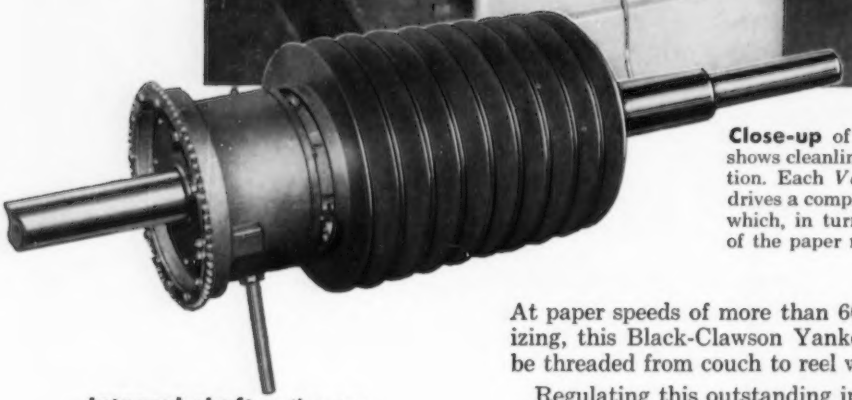
- **MANAGEMENT** prefers Annin Valves because of low initial cost and low maintenance and spare parts inventory.
- **PRODUCTION** men prefer Annin Valves because of longer on-stream service and better product control.
- **MAINTENANCE** men prefer Annin Valves because of ease of maintenance and simplicity of modification for other services.

ANNIN *Control* **VALVES**

THE ANNIN COMPANY
DIVISION OF THE ANNIN CORPORATION
6570 Telegraph Road, Los Angeles 22, California

Texrope Drives regulate 600-fpm threading of Black-Clawson machine in Michigan mill





Close-up of Black-Clawson machine drives shows cleanliness and compactness of installation. Each *Vari-Pitch* integral-shaft sheave drives a companion sheave on the gear reducer which, in turn, transmits power to a section of the paper machine.

Integral-shaft motion control *Vari-Pitch* sheaves used as sectionalized paper machine drives are made exclusively by Allis-Chalmers. Their use results in lower operating costs, more accurate speed control, more continuous production... MORE profit for users.

At paper speeds of more than 600 fpm on one-time carbonizing, this Black-Clawson Yankee Fourdrinier machine can be threaded from couch to reel with a 6-inch wide tail.

Regulating this outstanding installation in a large Michigan mill are integral-shaft motion control *Vari-Pitch* drives. Their application results in speed control within 1% and permits the ultimate in simplicity of operation.

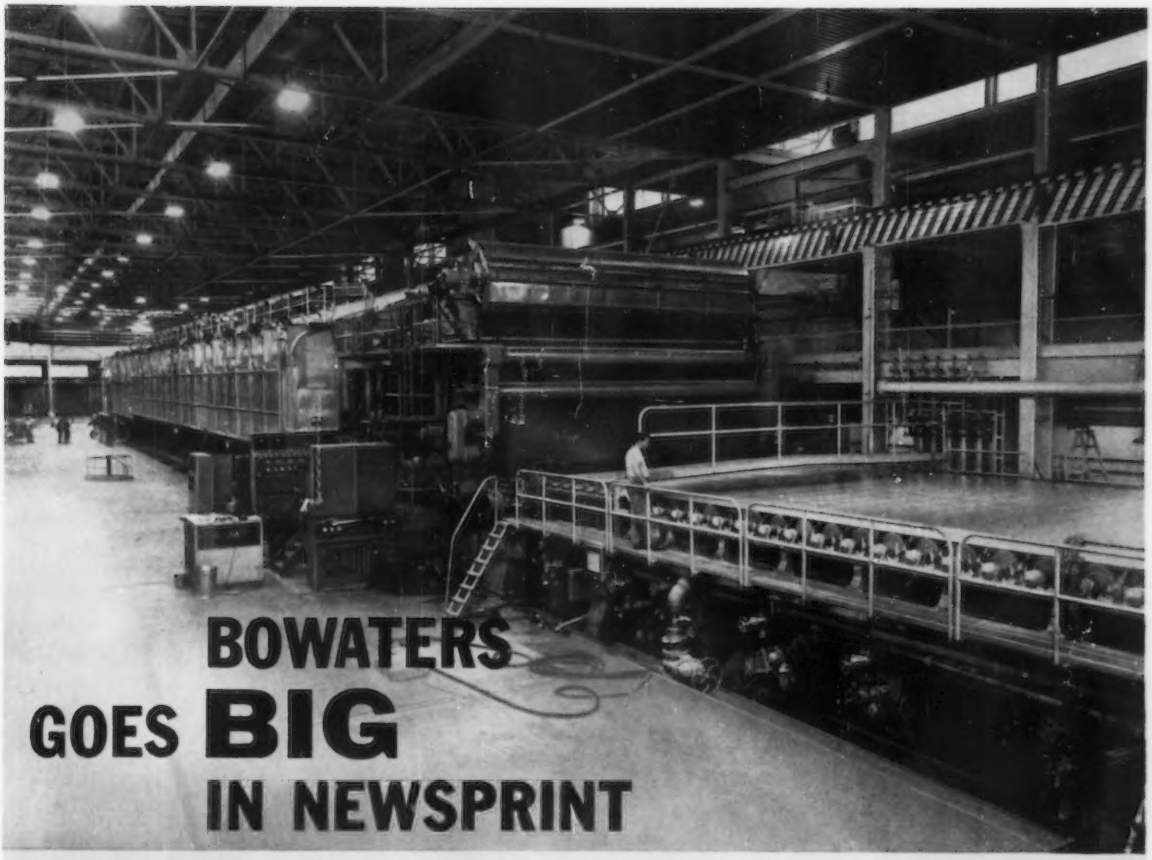
As replacements or as new machinery components, specify *Texrope* drives everywhere in the mill. Contact your A-C sales office or distributor, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.

Texrope and *Vari-Pitch* are Allis-Chalmers trademarks.

A-C ALLIS-CHALMERS

ALLIS-CHALMERS

A-5387



BOWATERS GOES BIG IN NEWSPRINT

with an installation by

F. H. McGRAW & COMPANY

engineers and constructors to American industry

Bowaters Southern Paper Corporation became one of the major newsprint producers in the United States in January of this year. That was when Bowaters' third machine, designed to produce newsprint at speeds up to 2500 feet every minute, went into operation at the Calhoun, Tenn., plant.

The complex new machinery, which raised plant production capacity to 300,000 tons a year, weighed close to seven and a half million pounds. It was installed, to tolerances as fine as one five-thousandth of an inch, by the skilled, experienced mechanical erection engineers and technicians of F. H. McGraw & Company.

The McGraw paper mill division has compiled an outstanding record of achievement in mill construction and precision installation for leading firms such as Container Corporation of America, Hartford City Paper Company, Kimberly-Clark, Coosa River Newsprint and others. In paper – as in other major American industries – McGraw men, methods, materials and machines are relied upon to solve tough problems of design, construction and installation, and to achieve on-time (or before-time) completion.

A McGraw engineer would be happy to discuss your construction or installation problems with you . . . no obligation, of course.

F. H. McGRAW & COMPANY

ENGINEERS AND CONSTRUCTORS

111 N. Wabash, Chicago, Ill. ● Hartford ● New York ● Pittsburgh ● Montreal

This man divides by 3 to stretch plasticizer dollars

(Dow salesmen put advanced transportation methods to work)

"A dollar saved is a dollar earned." That's an axiom many Dow customers find rewardingly true.

One eastern paper maker, for instance, uses diethylene glycol as a plasticizer for specialty papers, as well as glycerine and propylene glycol. His requirements call for less than carload quantities, yet he buys at full tank-car prices.

It's simple mathematics. A Dow salesman suggests the use of a three-compartmented tank car*. Thus, this one car takes on the glycols and glycerine . . . carries all three to the customer at the carload quantity purchase price.

This isn't unusual. It's just typical of the advanced methods and techniques that give paper manufacturers more for their money in many ways. For, large or small, the chemical user benefits from a forward-looking plan that is geared to tomorrow's needs . . . today. THE DOW CHEMICAL COMPANY, Midland, Michigan, Dept. GD 805F.

*2-compartment tank cars also available.

1

YOU CAN DEPEND ON DOW

Capacity to Exceed Demand for 2 Years

Paper and paperboard productive capacity will probably remain greater than the demand level for several years said David L. Luke, president West Virginia Pulp and Paper Co., this week. The overcapacity, which has been obvious for considerable time in paperboard is beginning to be felt in book, magazine and newsprint, said Mr. Luke.

Flexible Packages Up In March

Shipments of converted flexible packaging products in March were 12% above those of February and 5% more than March 1956 according to a U.S. Dept. of Commerce report dated June 12, 1957. Included in this category are packaging products made from paper (glassine, greaseproof, parchment, kraft and sulphite wrappings, etc.) cellophane and polyethylene.

Wood Pulp Expansions Deferred

The rate of increase in North American pulp capacity will decline sharply in 1958 and 1959, reports J. L. Ritchie in this issue. In recent months expansion programs planned for this continent to produce at least five million additional tons of pulp have been deferred. The result of this is that excess pulp production capacity will be considerably less than previously anticipated but still high enough for concern.

Newsprint Over-Supply Predicted

Excess capacity in newsprint production over world demand up to 1960 was forecast in a Commerce Department report this week. Paper Trade Journal has been predicting this for over a year, in the face of the American Newspaper Publishers Ass'n. propaganda for more newsprint capacity.

Flexible Wrap Makers Follow Rigid Trend

Not too long ago a large share of the flexible wrapping business in the U.S. was enjoyed by three stalwart and independent converters —Shellmar-Betner, Milprint, and Dobecmun. First to depart from the free triumvirate was Shellmar-Betner, who joined the ranks of Continental Can. Next came confirmation this week of what we have known since April that Milprint is throwing its lot with Philip Morris . . . and then there was one. . . . Will Dobecmun follow the parade? Apparently it will. Latest news (page 28) reports Dow Chemical is courting ardently.

Fiber Box Shipments Off 2%

Fiber box shipments for the first five months ran 2% below the Jan.-May total for last year. Solid fiber container shipments were off 11% for the period and corrugated boxes were down 2%. The above are based on figures released by the Fibre Box Ass'n.

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better paper
with

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BILT-WAX
AMERICAN PRODUCTS

Bilt-Wax

IMPROVED WAX EMULSIONS

FOR

hard board

magazine—liner

carton stock—insulation board

details on request

R. T. VANDERBILT CO., INC.

230 Park Avenue, New York 17, N. Y.

Fibreboard Plans Two Mills By 1965

The management of Fibreboard Paper Products Corp. expects that the California company will have to build two new pulp and paperboard mills by 1965. Reporting management's outlook was W. L. Keady, president of the company.

Mr. Keady told a group of visitors at the company's Antioch, Calif. plant that in the light of projected requirements for company products Fibreboard expects to have to build a new pulp and paperboard plant by 1960, equal in capacity to its present San Joaquin Div. plant in Antioch, and a second such plant by 1965. The San Joaquin plant can produce 135,000 tons a year. Fibreboard's paperboard requirements are expected to increase by 225,000 tons a year by 1965, over present capacity of 490,000 tons a year, Mr. Keady said.

Vanity Fair to Reopen Natural Dam Mill

The two-machine tissue mill of the former Rushmore Paper Mills Inc. is due to be rescued from idleness when it resumes production July 1 at Natural Dam, N. Y. When the mill starts up it will make toilet tissue for Vanity Fair Paper Mills Inc. in Plattsburgh, N. Y. At first, the paper will be trucked to Plattsburgh for conversion. Plans call eventually for a converting operation at Natural Dam.

Both the Vanity Fair and Rushmore companies are controlled by J. C. Wemyss who is also president of Groveton Papers Co. in New Hampshire. In preparation for the mill opening, Charles Wemyss, vice-president and production manager of Vanity Fair, has been in the Natural Dam area lining up new operators.

The Natural Dam mill has been idle since about July 1, 1956, when J. C. Wemyss decided the mill had become uneconomical to operate under the going market.

First Unit Finished At Crossett

The first unit of a $5,000,000 modernization and expansion program started in December 1956 at the Crossett Paper Mills, Crossett, Ark., has been completed.

New bark-handling facilities have already been put into use. The rest of the program to expand and improve efficiency of chemical recovery units, pulp storage and wood-handling facilities at the Crossett Co.'s kraft paper mill has been moving on schedule, according to J. C. Hair, manager of the mills.

Contracts for the biggest single unit of the program have been let. The contracts, for the chemical recovery boiler, went to Brice Building Co. of Birmingham, for construction of a building to house the boiler and to Kaminer Construction Co. of Georgia, for erection of the boiler itself.

JOHN C W EVANS, EDITOR PAPER TRADE JOURNAL
WE ARE PLEASED TO ANNOUNCE NEWSPRINT SHEET SUCCESSFULLY CARRIED THROUGH TO WINDERS TODAY ON NUMBER THREE MACHINE JUST FIVE OPERATING DAYS AFTER START UP. START UP WAS ON SCHEDULE AND THIRTEEN MONTHS FROM COMMENCEMENT OF CONSTRUCTION. NUMBER THREE MACHINE INCREASES OUR INSTALLED NEWSPRINT CAPACITY BY FIFTY-SEVEN PER CENT. CONSTRUCTION OF NUMBER FOUR MACHINE IS ALSO PROCEEDING ON SCHEDULE-
THE GREAT LAKES PAPER CO LTD-

Marathon Denies Rumored Merger With American Can

When asked recently whether Marathon Corp. is engaged in merger talks with American Can Co., Marathon's president, John Stevens, told newsmen that he couldn't say there wouldn't be anything of the kind in the future but as of the moment there was nothing. It was revealed that an unknown party has accumulated considerable Marathon stock.

American Can Co. officials, non-committal on the Marathon question, are known to be seeking integration with a major producer of bleached food board. The company has been reported recently interested in Gilman Paper Corp.

Allied-Albany Continues With Newsprint Conversion

Allied-Albany Paper Corp. is proceeding with the plan for converting the Albany, N. Y. paper mill to produce newsprint and light-weight groundwood papers.

Allied-Albany (formerly A.P.W. Products, Inc.) has been a producer of toweling and paper napkins. In January, 1957 Allied Paper Corp. purchased almost two-thirds of the stock of the corporation and decided to change the product. Toweling and napkins inventory was run out and the machines were shut down for conversion to newsprint and light-weight groundwood papers. The conversion is proceeding and the mill is expected to be in production by the end of the second quarter.

Mead Buys Cleveland Paper Co.

Purchase of the Cleveland Paper Co. by the Mead Corp. was announced recently. Cleveland Paper, established in 1891, has been a distributor of Mead papers 25 years.

Principal shareholders in the Cleveland firm are John H. Walsh, board chairman, and Orlin Herthneck, president.

Spokesmen for Mead said those officers will continue to manage the distributorship and that there are no changes in personnel contemplated.

Sorg to Modernize & Expand Output

Sorg Paper Co. of Middletown, Ohio has approved plans for a $2 million expansion and plant improvement program.

Phases of the program include:

1. Installation of new stock preparation equipment and rebuilding of the paper machine in the Oglesby Mill, estimated to cost one million dollars.

2. Construction of a new warehouse adjoining the Smith Mill at a cost of approximately $320,000.

Miscellaneous improvements throughout the plant, account for the balance of the outlay.

Construction of the warehouse will begin immediately. The three-story building on Columbia Ave. will be of concrete construction. It will afford 60,000 sq. ft. of storage area.

It will be used for storage of finished stock paper and converting operations.

The replacement of the present pulp beating equipment and the rebuilding of the paper machine in the Oglesby Mill will be completed as soon as possible. Sorg officials hope to see the major part of it accomplished within the next 18 months.

Whippany's Big Machine Starts In August

An official of Whippany Paper Board Co., Whippany, N. J. reported last week that the new 234 inch cylinder board machine in the firm's Eden mill addition will get rolling in August of this year. The machine, the world's widest cylinder, is the first of two paper machines being added to Whippany's production. Construction on the second, a 250-inch fourdrinier, is well under way.

A feature of special interest in the construction of the new cylinder machine was the use of a new optical leveling method to align and level the base plates for the machine. The method was described in detail in Paper Trade Journal, April 1, 1957.

Howard Smith Control to Dominion Tar

Dominion Tar and Chemical Co. in Montreal has announced that Howard Smith Paper Mills Ltd. has become its subsidiary.

Dominion Tar, which now owns 53.5% of Howard Smith common shares, reports that its May 17 offer to Howard Smith shareholders of 3½ shares of Dominion for each share of Howard Smith has been oversubscribed.

The offer had been limited to 354,588 shares.

Bowaters Southern Gives Awards To Three Scholars

Three engineering scholarships amounting to $10,800 have been awarded by Bowaters Southern Paper Corp., Calhoun, Tenn.

Receiving the scholarships were Howard W. Ray and William B. Hairrell, both of Athens, Tenn. and recent graduates of McMinn County High School, and James E. Hagler of Ten Mile, a graduate of Tennessee Military Institute.

The scholarships are for $600 each, subject to renewal for a period of four years. In addition, $300 will be awarded each year during the term of the scholarships to the colleges attended by the winners. The winners are permitted to attend one of four engineering colleges, University of Tennessee, Auburn, Vanderbilt or Georgia Tech.

Paper and Board Production

According to the American Paper and Pulp Association, the ratio of the United States production to mill capacity for the week ending June 8, 1957, was 92.7 percent, compared with 89.8 percent, revised for the preceding week. The ratio was 101.2 percent for the corresponding week a year ago. Mills producing newsprint exclusively are not included.

The paper board production ratio for the week ending June 8, 1957 was 86 percent, compared with 88 percent for the preceding week and 97 percent for the corresponding week last year.

(Detailed statistics on page 57.)

Strike Closes Down Hammermill Paper Co.

All production has ceased at Hammermill Paper Co. in Erie, Pa. as a result of a plant-wide strike called on June 14 by the United Papermakers and Paper Workers Union. The union recently accepted a 10 cent wage hike but is balking at fringe benefit offers.

No progress toward settlement was made at a meeting on June 17.

Canadian Fine Paper Summary

Canadian fine paper production and shipments gained sharply in April. Output for the month was 23,524 tons, an increase of 17.6 percent from the 20,000 tons produced in April last year. At the same time, total shipments increased 10.5 percent, from 20,297 tons in April last year to 22,433 tons this year.

Domestic shipments during the month totalled 20,967 tons as against 18,978 tons last year. April exports were 1,466 tons this year as compared with 1,319 tons in 1956.

Fine paper output in the first four months amounted to 86,716 tons as against 80,045 tons last year. Shipments for the period totalled 86,703 tons this year and 81,480 tons in 1956. Included in this year's shipments were domestic shipments of 81,596 tons and exports of 5,107 tons while last year's total included domestic shipments of 76,178 tons and exports of 5,302 tons.

Some 2,581 tons of coated paper were processed in April. This was an increase of 7.0 percent from the 2,413 tons processed in the same month last year. Coated paper shipments in April were 2,501 tons, as against 2,418 tons in the same month last year. Coated paper processed in the first four months totalled 10,093 tons as against 9,272 tons last year. Shipments for the same periods in 1956 were 9,948 tons and 9,505 tons.

Promotes Tree Farming Adds to Forestry Staff

In a further step to develop tree farming in American Box Board's pulpwood procurement areas, Gordon B. Bonfield, company vice-president, has announced that John Calkins, former district manager of American Forest Product Industries, will be added to the company's forestry staff. In the position of staff assistant to Arthur Koller, woodlands manager, Mr. Calkins will be responsible for the administration of the American Box Board Tree Farm Family program. This group represents Michigan landowners sponsored by the company.

May Newsprint Output At All-Time Peak

Production and shipments of newsprint in North America during May, 1957 amounted to 744,129 tons—an all-time monthly record—and to 746,797 tons respectively compared with corresponding totals of 699,558 tons and 701,328 tons in May, 1956 according to the Newsprint Service Bureau. Output in the United States was 171,156 tons—largest monthly volume in history—and shipments were 172,541 tons, while Canadian production amounted to the record May high of 572,973 tons and shipments to 574,256 tons.

The record 806,347 tons turned out by United States mills through the end of May this year was 100,098 tons or 14.2 percent greater than in the first five months of 1956, while output in Canada of 2,779,547 tons also constituted a new high and was 119,745 tons or 4.5 percent above that in the corresponding period of last year. Thus the continental increase amounted to 219,843 tons or 6.5 percent.

North American manufacturers' stocks on May 31, 1957 aggregated 225,601 tons compared with 228,269 tons on the last day of the preceeding month and 149,882 tons at the end of May, 1956. The continental total was composed of 9,613 tons and 215,988 tons held by United States and Canadian mills respectively and inventories were higher than a year ago by 709 tons in the former instance and by 75,010 tons in the latter.

Nekoosa Teaching Finance To Supervisors

To familiarize the supervisory personnel of Nekoosa-Edwards Paper Co. with basic financial terminology and procedures, the Port Edwards, Wis. firm instituted a five-week informal course in corporate finance. The course originally requested by a supervisor, was received enthusiastically by the first class of 15, according to Nekoosa officials, and bodes to become a fixture in the advanced supervisory training program.

The course was designed by a three-man group made up of the law department manager, the budgets supervisor, and the training director. The approved syllabus called for five two-hour sessions in the form of discussion periods with department heads and others from the statistics and accounting division as discussion leaders. There was one outside speaker from the Milwaukee office of Merrill Lynch, Pierce, Fenner & Beane, investment banking firm.

Subject matter included the nature and organization of a corporation under Wisconsin law, sources and uses of cash, the relationship of balance sheets and income statements, methods of financing for expansion, control of credit through the federal reserve banking system and planning cash requirements and investment methods, including acquisitions, purchases and mergers.

J. N. Stephenson

Honored by U. of Me.

The editor-in-chief of Pulp and Paper Magazines of Canada has been awarded a signal honour by the University of Maine. At the fortieth reunion on June 9 of the Class of 1917, in which he was enrolled as post-graduate student, J. N. Stephenson was given an honorary Doctor of Science degree for his contributions to the technology of pulp and paper manufacture. His thesis—on the use of color photography (then new) for recording stained paper-making fibres—was interrupted when he came to Canada in December, 1916, to take up his present position.

Items included in contributions for which Mr. Stephenson has been honoured were: co-organizer, with Dr. Ralph H. McKee and Prof. Guy Durgin, of America's first Pulp and Paper School in 1913, at the University of Maine; editor-in-chief of the industry's textbook "Pulp and Paper Manufacture"; co-organizer, with J. J. Harpell, of the first Correspondence School of Pulp and Paper Making; and service on various committees of TAPPI, the Technical Section of the Canadian Pulp and Paper Assn. and the Superintendents Assn. He has contributed many articles to the literature of the industry, including the description of pulp and paper manufacture in Encyclopaedia Britannica.

Mr. Stephenson has been editor and lately editor-in-chief of Pulp and Paper Magazine of Canada for forty years, as well as editor of Pulp and Paper Manual of Canada, established in 1930, and of National Directory of the Canadian Pulp and Paper Industries, published since 1907.

Sponsors Science Institute

New York & Pennsylvania Co., Lock Haven, Pa., in cooperation with the Pennsylvania State University and other industries, is co-sponsoring a summer institute for high school science teachers.

Recognizing the need to interest and train high school students in the sciences, several Pennsylvania industries are joining Penn State in granting financial assistance to science teachers attending the Institute.

The Institute, which will be held at University Park, Pa. from July 1 to August 10, is designed to help meet the continued shortage of qualified scientists and engineers. It will be attended by high school science teachers who have been seeking a program on the graduate level that covers the broad content of sciences taught in high school and teaching techniques while recognizing the maturity and experience of in-service teachers.

"Daily Paper" for 1977 Still Making Friends

"The Daily Paper for 1977", newspaper-style tribute to papermakers and forecast of the Forest Age that was presented to industry leaders at February's APPA-TAPPI meetings by the Paper Chemicals Department of American Cyanamid Co., and published in the March 11 issue of P. T. J., continues to do a major job of winning friends for the paper industry. Requests for more than 15,000 copies have been received by Cyanamid from the public and the paper industry. Most recent distribution has been to New York City science teachers, as part of the Paper Chemicals Department's continuing program of working with students and teachers.

Science Department Chairman from every New York City Junior High School received copies of The Daily Paper at the annual Board of Education science teaching conference, held in May.

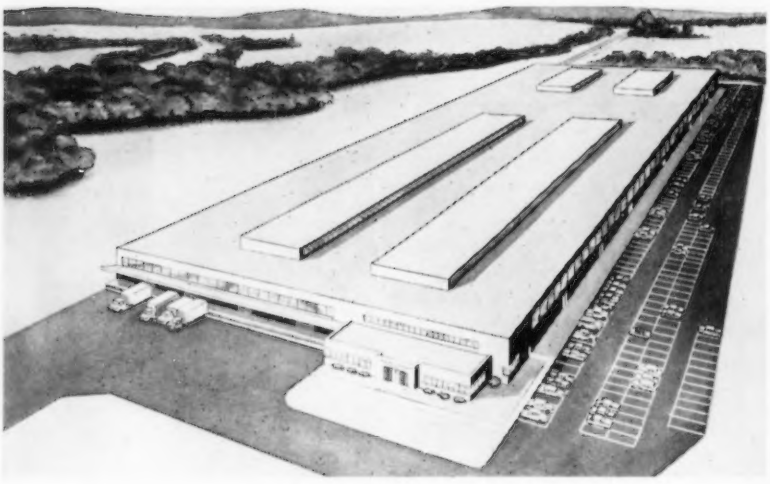
Brown Co. Reaches Contract Agreement

Brown Co., paper manufacturers, and Local 75 of the International Brotherhood of Pulp, Sulphite and Paper Workers Union have announced jointly they had reached an agreement on a new one-year contract covering some 3,000 employes.

Terms, which were voted on by the union membership on June 17, were not announced up to press time.

The company had offered a four-cent general raise. The union had sought a 10 per cent boost and fringe benefits. The average base pay now is $1.61.

NEWS OF CONVERTERS



Inland Container Plans Chicago Box Plant

Inland Container Corp., Indianapolis, Ind., plans for construction of a large, modern corrugated box plant in Chicago are nearing completion. A 35-acre tract of land located on Grand Avenue in the vicinity of Franklin Park, has been purchased from the Chicago and Northwestern Railroad.

The building will be of brick and steel, and will provide in excess of 140,000 sq. ft. of space. Equipment for the manufacture of boxes of the latest design, largely built to Inland's specifications, will be installed.

Inland Container operates 12 corrugated box plants east of the Mississippi River and also has large containerboard mills and timberland interests in the South East which supply materials for its box plants.

The company manufactures all types of custom-designed, printed corrugated containers for packing and shipping.

NVF's New Containers

National Vulcanized Fibre Co., Wilmington, Del., is now shipping its Vulcot Princess hampers and wastebaskets in new corrugated containers, designed and constructed by Container Corp. of America. The new containers are said to protect oval products with scored sheets that fit over the styrene lids of hampers and absorb stress and shock.

U. S. Envelope Unveils New Fast Envelope Machine

United States Envelope Co. has revealed the development and operation of a converting machine that will make a diagonal-seam envelope economically and at high speed directly from a roll of paper.

The high-speed machine makes commercial and official envelopes and greeting card envelopes. Its speed is about 900 envelopes a minute, or three times the output of conventional equipment. U. S. Envelope has a battery of the new machines in operation. Main office of the company is Springfield, Mass.

The new machine uses a roll of paper that is fed directly into the machine, to be cut and folded. Vincent E. Heywood, chief of the company's mechanical research department in Worcester, Mass. is credited with the design and development of the machine.

Dow, Dobeckmun Discuss Merger

Dow Chemical Co. is discussing a possible merger with Dobeckmun Co. of Cleveland.

"We are talking merger, but that doesn't mean we are negotiating," the Dow spokesman said when asked about a report of preliminary merger talks between the Michigan chemical firm and the Cleveland manufacturer of flexible packaging, gift wraps, and metallic yarns.

The reports quoted Dobeckmun officials as saying that since the acquisition of the flexible packaging business of Shellmar Products Corp. by Continental Can Co. in 1953 and the current proposed acquisition of Milprint, Inc., by Philip Morris, Inc., Dobeckmun is the remaining independent flexible packaging maker.

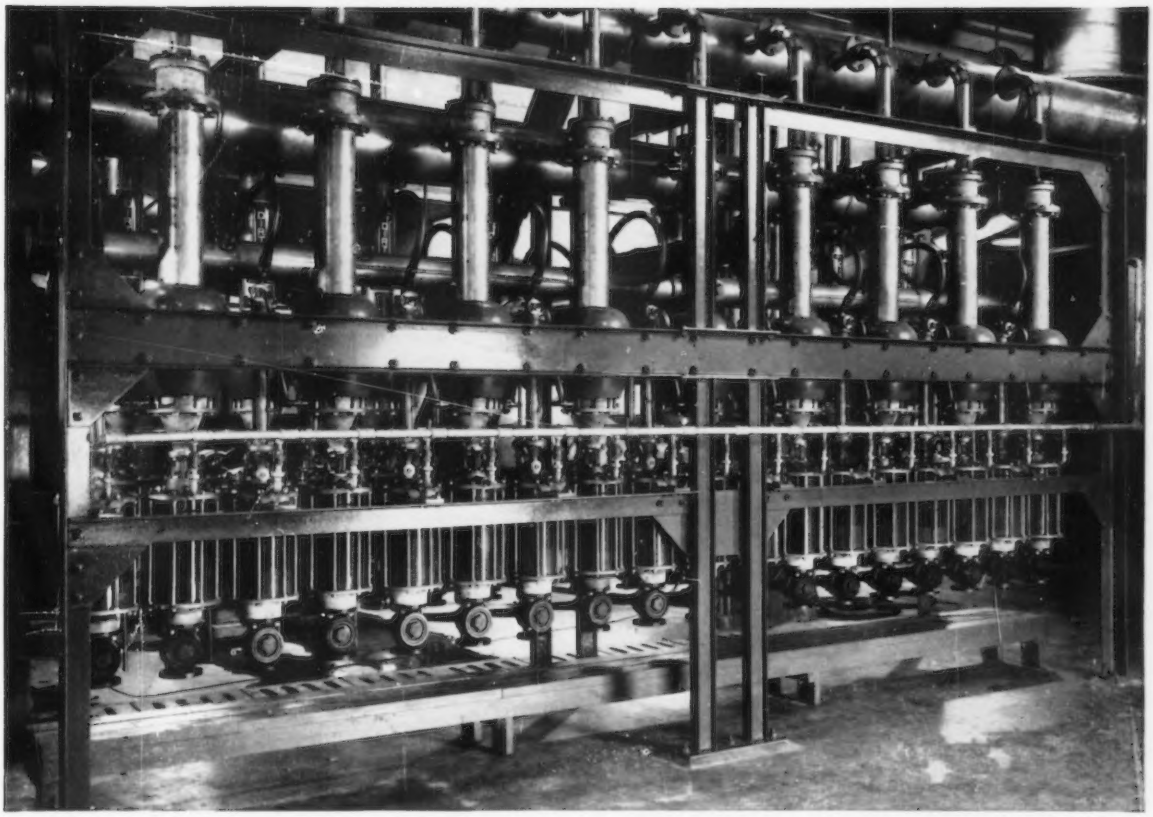
Other companies reported to be interested at various times in acquiring Dobeckmun have been W. R. Grace & Co., Allied Chemical & Dye Co., Aluminum Co. of America, Continental Can, and Crown Zellerbach.

Dixie Cup Co.'s New Round-Up Design Plates

The plastic coated 9" plates come in 32-count packages and carry a Western motif which matches Dixie's recently-introduced Round-Up Design Hot and Cold Drink Cups.

The new plates depict early Frontier scenes of cowboys, Indians, horses, chuck wagons, and related subjects. Printed in light and dark brown, the plates resist the absorption of gravies, sauces, and other liquids, and have extremely good rigidity and strength. Dixie Round-Up Design Plates feature Dixie's popular youth-size place setting premium, in the exclusive Lobelia pattern, for 60c and a Dixie label.

Each Round-Up Design Plate Package is sealed by the Dixie Steri-Packed process which protects it from dust and dirt from factory to customer.



DIRTECS | LOW COST PROTECTION FOR BOTH PAPER QUALITY AND PAPER MACHINERY

Abrasive particles of dirt, sand, metal, grit can increase rejects, ruin quality and injure machine wires and roll surfaces.

Dirtecs provide practical, economical protection against this kind of dirt. They deliver clean stock in full volume without mixing any of it with the rejects. They are easy and economical to install, operate and maintain.

Dirtecs have been widely adopted not only for use ahead of the paper machine and as tailings units for Bird Screens, but in the pulp mill and even in water supply lines.

They come in regular and *king* size to handle any volume. Ask us for recommendations, layouts and estimates.

BIRD MACHINE COMPANY

SOUTH WALPOLE, MASS.

REGIONAL OFFICES: EVANSTON, ILLINOIS
PORTLAND, OREGON • ATLANTA, GEORGIA

Canadian Manufacturers of Bird Machinery
CANADIAN INGERSOLL-RAND COMPANY, Limited, Montreal

Lily-Tulip's New Riverside Plant

Plans for their new 325,000 sq. ft. plant, to be completed the latter part of 1957 in Riverside, Calif., have been announced by Lily-Tulip Cup Corp.

The property, comprising 48 acres, is located on an important thoroughfare on the outskirts of the city, and on the transcontinental lines of the Santa Fe and Union Pacific railroads.

Special features in the construction will be an underground tunnel system for service lines, air conditioning and humidity control in manufacturing areas and offices, and attractive employee facilities.

M. L. Shelton

Fleming Enters Container Field

Entry of one of the nation's oldest paper board manufacturers into the shipping container field occurred when Fleming & Sons, Inc., added a shipping container division to their mill at 1120 E. Clarendon in Dallas.

Marvin L. Shelton had joined the Fleming organization as general manager of the container division. Mr. Shelton, for 14 years with the Container Corp. of America, had held the same post with that firm in Fort Worth.

The new division is equipped with a 63-inch Langston corrugator, and complete finishing equipment. It has capacity for producing shipping containers totalling 32 million sq. ft. per month, including solid fibre containers and single-face rolls. Products of the new division will be marketed nationally.

Thomas E. Holden has been named plant manager of the new division. His background includes 21 years production experience with Gaylord Container Corp.

Stevens Brothers Expands In Baltimore

C. F. Stevens Brothers, Inc., the Baltimore kraft, glassine and other transparent bag maker has begun the erection of a one- and two-story addition to the plant. The new structure will contain about 10,000 square feet. A year ago this firm completed a large improvement and rearrangement program, and a year earlier it built a 10,000 square foot addition.

David Mazer

Heads Cup & Container Marketing For Hudson

David Mazer has been appointed Cup & Container Product manager at Hudson Pulp & Paper Corp., New York City.

Mr. Mazer will handle marketing responsibilities for the complete line of Hudson cups and containers, newest product development of this manufacturer of paper napkins. He is former sales manager of Bulk Sales and served as assistant sales manager in the Industrial Products Department.

Pittsburgh Converter To Expand into New Plant

Papercraft Corp., a subsidiary of Kapart Co., Pittsburgh, has acquired the vacant Fort Pitt Brewing Co. plant in Jeannette, Pa. and will convert the building to production of gift wrapping papers along the same line as those Papercraft now produces in its Pittsburgh plant.

Renovation of the Jeannette properties has been started, and plans call for rebuilding some of the structures. Papercraft expects to begin limited operations there this fall.

Cellu-Craft Expands

An increase in operating space of 25,000 sq. ft. over present facilities has been announced by Cellu-Craft Products Corp., New Hyde Park, N. Y., designers, converters and color printers of flexible packaging materials.

This marks the fifth expansion since Cellu-Craft began operation in 1937.

Construction of a new building adjacent to the present plant is scheduled to start this month, Samuel J. Leeds, president, revealed.

In addition, the company has acquired approximately 60,000 sq. ft. of of adjoining land for future expansion.

Cellu-Craft converts cellophane, polyethylene, Pliofilm, acetate, Mylar, foils, glassine, paper and various laminations of these materials into bags, rolls, sheets and pouches, either printed or unprinted.

OBITUARIES

Theodore A. Deininger, 63, retired superintendent of the Marathon Corp. mill at Rothschild, Wis., died June 10. He had retired in 1956, after 44 years with the firm.

Martin J. Collins, 88, retired president of the Graham Paper Co., paper converter in St. Louis, died of a cerebral hemorrhage June 8. Mr. Collins, who started as an office boy at the paper firm, became president in 1926. He headed the company until 1940 when he retired, moving to the board of directors.

Nicholas J. Barrett, 87, who succeeded his father, Thomas Barrett, as president of Thomas Barrett & Son, paper merchants, of 570 Seventh Ave. New York City, died June 16. He was a charter member of the National Paper Trade Assn.

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	Delivered Basis		Varying Freight Allowances†		
	U.S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$82.50/ 90.00	$82.50/ 90.00	§$83.00/ 86.00§	§$92.00/ —	§$77.50/ 90.00
Kraft, Blchd.	152.00/155.00	155.00/ —	§155.00/ —		§155.00/ —
Kraft, Blchd. Hdwd.	150.00/ —		§137.00/ —		
Kraft, Semi-bleached	140.00/ —	135.00/140.00	§135.00/140.00§	*137.50/142.50	
Kraft, Unbl.	117.50/125.00	120.00/130.00	†125.00/130.00	125.00/ —	
Sulphite, Blchd.	150.00/ —	150.00/ —	*150.00/ —	*150.00/ —	145.00/147.50†
Sulphite, Unblchd.	130.00/ —	130.00/ —	†130.50/ —	*130.00/ —	
Sulphite, Unb'l. Gl'sn		129.00/ —	†129.00/ —		
Soda, Blchd.	142.50/145.00	145.00/ —			

§ On Dock Atlantic Ports. * Freight allowed.

NEW YORK RAG MARKET

New Domestic Cotton Cuttings
Delivered Mill Basis
PRICES NOMINAL

	Per 100 lbs.
No. 1 White Shirts	$13.50/$14.00
No. 1 Unblchd. Muslins	16.00/ 16.75
Blchd. & Unblchd. Underwears	15.00/ 15.50
No. 1 Light Silesias	7.00/ 7.50
No. 1 Light Blue Overalls	7.25/ 8.00
Percales	6.00/ 6.50
No. 1 Light Prints	5.00/ 5.50
Suntan Khakis	5.50/ 6.25
Cottonades	3.25/ 3.75
No. 1 Washables	2.50/ 2.75

Old Domestic Cotton Rags

(Prices to Dealers, f.o.b. Ship. Pt.)

	Per 100 lbs.
Mixed White	$3.00/$3.25
Cotton Pants & Overalls	2.00/ 2.25
Twos and Blues, Repacked	1.50/ 1.75
No. 2 Roofing	.60/ .70

COTTON LINTERS

Memphis Market
f.o.b. Oilmills

Week Ended June 13	Per 100 lbs.
Grade 1 n.a.	
2	$9.50/ $9.25
3 } 1 cut—felting	9.25/ 8.50
4	8.25/ 7.50
5	7.50/ 7.00
6	6.50/ 6.00
7	6.00/ 5.75

*Based on 73% cellulose.

Old Rope & Bagging

(Prices to Dealers, f.o.b. N.Y.)

	Per 100 lbs
New Burlap Cuts	$5.75/$6.50
Scrap Burlap	4.50/ 5.25
Australian Wool Pouches	5.25/ 5.75
Gunny	5.50/ 6.25
No. 1 Domestic Manila Rope	7.75/ 8.25
No. 1 Foreign Manila Rope	6.25/ 6.50
Domestic Sisal Strings	4.25/ 4.50

WASTE PAPER MARKET

Mill Prices, f.o.b. Trucks Shipping Point — Includes Brokerage

These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers, SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.

	New York	Boston	Chicago	Los Angeles
	June 17	June 17	June 17	June 17
No. 1 Mixed Paper	$4.00/ 6.00	5.00/ 7.00	4.00/ —	12.00/ —
No. 1 News	10.00/ 12.00	11.00/ —	12.00/ —	11.00/ —
Overissue News (Lg. size)	13.00/ 16.00	9.00/ 12.00	17.00/ —	13.00/ —
Mill Wrappers	12.00/ 14.00	11.00/ 12.00	7.00/ —	13.00/ —
Old Corrugated Containers	15.00/ 17.00	15.00/ 16.00	22.00/ —	18.00/ —
Super Resorted Kraft Paper	30.00/ 35.00	35.00/ 36.00	30.00/ —	45.00/ —
New Double Kr. Ld. Corr. Cuts (Semi-chem. medium)	25.00/ 30.00	30.00/ 35.00	35.50/ —	30.00/ —
New 100% Kraft Corr. Cuts	40.00/ 45.00	40.00/ 45.00	40.00/ 45.00	40.00/ 45.00
New Br. Kraft, Env. Cuts	50.00/ 55.00	50.00/ 55.00	55.00/ —	40.00/ —
New Br. Kr. Bag Waste Prntd.	65.00/ 75.00	75.00/ 80.00	55.00/ —	45.00/ 50.00
New Br. Kr. Bag Waste Unprintd	55.00/ 60.00	60.00/ 65.00	50.00/ —	45.00/ 50.00
	60.00/ 65.00	70.00/ 75.00	65.00/ —	45.00/ 50.00
No. 1 Groundwood Shvs.	25.00/ 30.00	25.00/ 30.00	22.00/ —	25.00/ 30.00
White Newsblanks	50.00/ 55.00	45.00/ 55.00	40.00/ —	55.00/ —
No. 1 Soft White Shvs.	55.00/ 65.00	60.00/ 65.00	60.00/ —	— / —
Super Soft White Shvs.	65.00/ 70.00	70.00/ 75.00	70.00/ —	— / —
Hd. White Shvs.	90.00/ 95.00	100.00/105.00	85.00/ —	85.00/ 90.00
Hd. White Env. Cuts	110.00/120.00	115.00/125.00	95.00/ —	100.00/110.00
Col. Tab. Cards	45.00/ 50.00	50.00/ 55.00	47.50/ —	30.00/ —
Manila Tab. Cards	60.00/ 65.00	65.00/ 75.00	65.00/ —	49.00/ —
No. 1 Col. Ledger	30.00/ 32.00	30.00/ 35.00	40.00/ —	27.50/ —
White Ledger	50.00/ 55.00	50.00/ 55.00	55.00/ —	35.00/ 40.00
Mixed Book & Mag.†	18.00/ 20.00	19.00/ 20.00	12.00/ —	— / —
No. 1 Books‡	25.00/ 27.00	24.00/ 26.00	27.50/ —	— / —

† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% of groundwood.

PRICES OF MATERIALS

Aluminum sulphate:		
coml. bulk, c.l. wks.	cwt.	$1.85 / 2.05
iron-free, c.l. wks.	cwt.	3.35 / —
Casein, acid prec.:		
dom. sh. pt. c.l. (30 mesh)	cwt.	56.00 / —
Arg. ex. dock, duty paid	cwt.	24.50 /26.00
New Zealand, do.	cwt.	27.00 /27.50
Caustic soda:		
c.l. wks. solid, 76%	cwt.	4.30 / —
flak. & grd. drums, c.l.	cwt.	4.70 / —
liquid 50% tanks		2.90 / —
liquid 73% tanks		3.00 / —
China Clay		
dom., dry-grd., airfloat:		
325 mesh bgs., c.l. Geo.	ton	10.00 / —
300 mesh, bgs., c.l. Geo.	ton	13.50 /14.50
imp., white, lump, c.l. ex. dock		20.00 /35.00
Chlorine:		
single-unit tanks, works	cwt.	3.15 / —
multiple unit, 2-5 cars per yr.		5.25 / 4.05
Formaldehyde:		
37% (inh. 8% methanol) USP:		
drums, c.l. dlvd.	lb.	.0715/ —
tank-cars dlvd.	lb.	.045 / —
Lime:		
hydrated, bulk, c.l. N.Y.	ton	22.32 / —
quicklime, bulk, c.l. N.Y.	ton	20.82 / —
Gum rosin:		
K, M, N, drums, c.l. Savan,	cwt.	7.45 / 7.55
Rosin size:		
70%, gum & pale paste, tank cars, south, sh. pt.	cwt.	7.44 / 7.48
Saltcake:		
dom. bulk, 100% anh. wks.	ton	28.00 / —
Soda ash:		
light, 58% ash bags, wks.	cwt.	1.85 / —
bulk, c.l. wks	cwt.	1.55 / —
Sodium peroxide:		
dms., c.l. E. of Miss.	lb.	.20½/ —
l.c.l. (same basis)		.21 / .21½
Sodium silicate, 40° Be.:		
tank-cars, wks.	cwt.	1.20 / —
drums, c.l. wks.	cwt.	1.55 / —
(47°) Be. WW.		
tank-cars, c.l. wks.	cwt.	1.90 / —
drums, c.l. wks.	cwt.	2.25 / —
Soybean, protein:		
chem. isol., wks. c.l. bags	lb.	.23 / —
Starches:		
corn, multiwalls, c.l. prod. plant:		
pearl	cwt.	6.49 / 6.75
white, dextrins	cwt.	8.08 / 8.20
chlorinated	cwt.	8.25 / 8.35
potato, Idaho, c.l. wks.	cwt.	6.50 / —
East, fr. all. 50 cents cwt.		
potato, Maine, f.o.b. wks.	cwt.	6.25 / —
Sulphuric acid:		
60° Be. cbys. c.l. wks.	cwt.	2.00 / —
l.c.l. wks.	cwt.	2.45 / —
tank-cars, wks.	ton	18.60 / —
Sulphur:		
crude, c.l. mines, contract,	long ton	26.50 / —
f.o.b. vessels Gulf dock	ton	28.00 / —
Sulphur dioxide:		
liquid, coml. cyl., wks.	lb.	.10 / .12
multi-unit cars, wks.	lb.	.0535/ —
Talc, fibrous grd., bags:		
c.l. wks., N.Y.	ton	28.00 / —
l.c.l. wks., N.Y.	ton	31.00 /36.00
Titanium dioxide:		
anstase, c.l. dlvd. E. bags.	lb.	.25½/ —
l.c.l. dlvd.	lb.	.26½/ —
rutile, c.l. dlvd.	lb.	.27½/ —
l.c.l. dlvd.	lb.	.28½/ —

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What You Should Know About Lighting Your Mills

Donald R. Phillips

General Electric Co., Cleveland, Ohio

Many of the benefits of good lighting are intangible but can be detected in safer, more efficient, more productive workmanship.

In the last few years new developments in lighting equipment and light sources have almost revolutionized the design of lighting systems—not only in the paper industry but in all industrial areas. These developments have done much to improve the visibility and comfort of industrial lighting systems—and to do it at a lower cost than was possible before.

Such improvements are particularly needed in the paper industry because lighting is such an essential part of paper making.

Many benefits of good lighting are intangible, difficult to determine by actual tests, but equally as important. These benefits which must vary from plant to plant, are in most cases probably more important in a given plant than those which can be measured directly. Their influence upon such factors as employee relations is constantly in the direction of more profitable operation. These are "extras" that can be expected when well-planned lighting is coordinated with other advanced management policies.

Figure 1 illustrates two benefits of lighting insofar as expenditure of human energy is concerned. Productivity increases as illumination increases—rapidly at lower levels and at a reduced rate for very high levels. The top curve shows how the expenditure of human energy decreases with increased levels of illumination. It continues to diminish long after the output curve becomes essentially flat. This indicates that for most tasks a lighting level is reached where there will be very little additional increase in output. This often indicates a limit of manual dexterity, rate of understanding, etc., rather than lack of improvement in seeing. It is still desirable to improve the seeing condition beyond this point. If the worker can perform his task with less effort, he can carry out his duties with greater safety and accuracy and with less strain, nervousness, and fatigue.

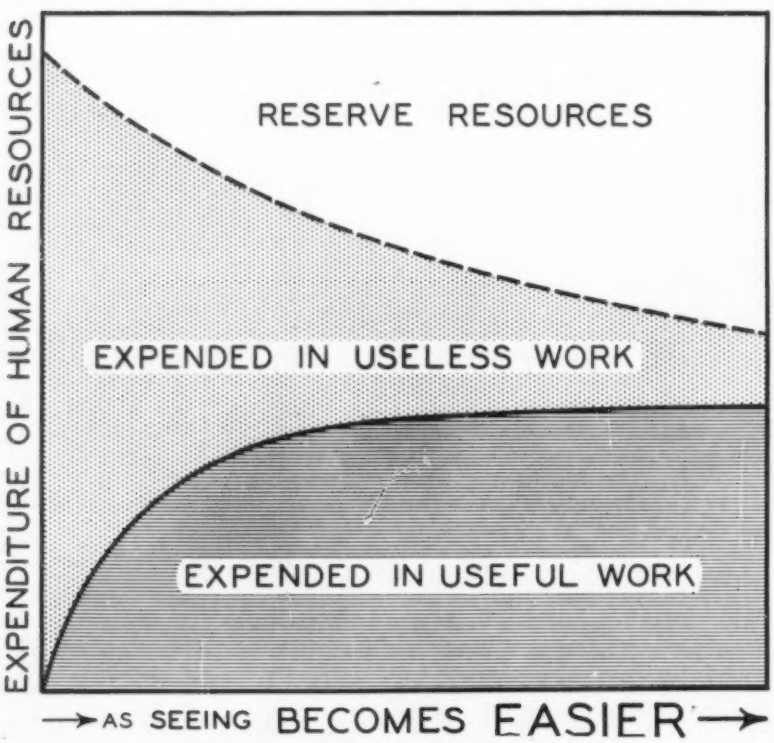

FIGURE 1—Benefits of lighting as related to human energy.

Basic Considerations

The specifications of lighting for any manufacturing process should be related to requirements suited in general to its nature and with special reference to characteristic seeing tasks. If seeing tasks are difficult or prolonged, then not only high levels of illumination are required, but specially adapted supplementary lighting may be necessary. Basic factors involved are the size of detail to be observed, its color and

contrast with its background (does it stand out, or does it blend so that it is hard to see), the length of the individual seeing operation, extent to which the task is repetitive (is it intermittent or continual), (is it moving), and whether color discrimination is involved. Thus, the lighting of paper making processes may fall into two general classifications, 1) those in which the visual tasks are not unduly severe (which may be adequately served by a good system of general illumination) and 2) those requiring special treatment.

Manufacturing Areas

For the general manufacturing processes the lighting system should not only give a good distribution of light over the area, but shadows should be minimized. These requirements are, in most cases, best met today by lighting systems employing fluorescent lamps. They combine high efficiency with low brightness (for eye comfort) and good color rendition. The lighting recommendations usually warranted for areas of this type are in the 50-100 footcandle range and generally utilize 2-lamp fluorescent equipment. The standard cool white lamps are usually used except in the critical color discrimination area. The lighting problem in these areas is discussed under the heading "Color Matching."

In relatively high bays (above approximately 25 feet) filament or mercury lamps, or combination of filament and mercury, are often best adapted. In the past they have had the advantage of reduced maintenance costs over fluorescent lamps even though their efficiency is lower. Recent developments in fluorescent lamps, however, make them more attractive for use in high mounting applications. Two years ago a high output, eight foot fluorescent lamp was developed with a light output 44 percent greater, which enables it to provide light at a lower overall cost.

In May, 1956, a Power-Groove lamp was announced. This lamp, in the eight foot size has almost twice as much light output as the high output lamp. These developments offer reduced maintenance costs while retaining the high efficiency of fluorescent lamps.

One of the aspects which may influence the choice of a particular light source for a general lighting system is reflected glare. For example, the use of high brightness sources such as mercury or filament lamps in the calendering areas is usually undesirable due to the high brightness specular reflections from the polished surfaces of the rolls.

Light Conditioning of Manufacturing Areas

Lighting of industrial areas has until recently too often been handled as a problem in obtaining a certain footcandle level with often little consideration of visual comfort. Present trends indicate a much more acute realization of the importance of the real advantage of providing pleasant visual environments. Improvements in comfort are achieved by better lamp shielding, higher room reflectances, and better control of room brightnesses.

Industrial lighting equipment and methods have been changed greatly in the past few years in order to provide the modern factory worker with the high quality lighting he needs. The prototype modern industrial lighting fixture (Figure 2) has a substantial component of upward light in order to balance the brightness in the overhead zone. This opening in the top also substantially improves the maintenance characteristics of the unit since dust and dirt can pass through the fixture instead of collecting on the reflector. These modern fixtures also have high efficiency because much of the light that was previously trapped between the lamp and reflector can now get out of the unit. Also, the lamps operate more efficiently since air current passing through the fixture cool the lamps. The outside of the reflector is finished white to help balance the brightness between the inside of the reflector and the surrounding area. The lamps are also adequately shielded. These new types combined with light finishes on the room surfaces and machines do much to improve the seeing comfort of the workers (Figure 3). Here we can compare the old with the new. The footcandle level on the work in the two areas is not much different (about 50 footcandles in the old area and 70 footcandles in the new) but notice the difference in seeing comfort.

The great improvement in comfort obtained with the new types of fluorescent fixtures has led to the development of new types of mercury and filament fixtures (Figure 4). The experimental aluminum high-bay fixture shown here has many of the features of the fluorescent units — i.e. upward light, good shielding, and good maintenance. Tremendous improvements in comfort are possible with units of this type. They are now commercially available and are expected to greatly improve the lighting of highmounting areas.

Paper Making Machines

The heart of any paper manufacturing plant is the paper making machine. Here the pulp slurry achieves formation, the water removed and the paper formed in a continuous sheet. The quality of the paper is primarily determined

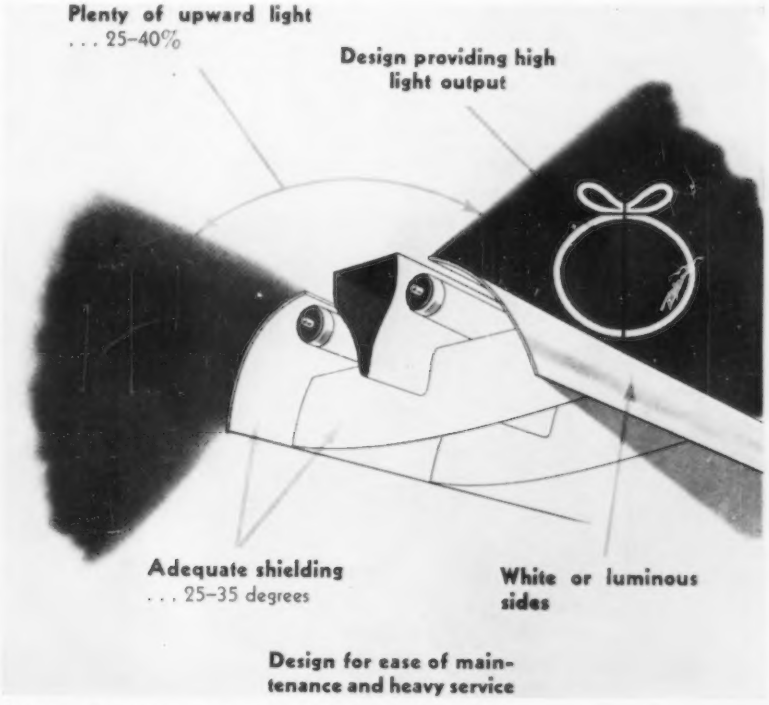
Plenty of upward light
. . . 25–40%
Design providing high light output
Adequate shielding
. . . 25–35 degrees
White or luminous sides
Design for ease of maintenance and heavy service

FIGURE 2—Modern industrial lighting fixture.

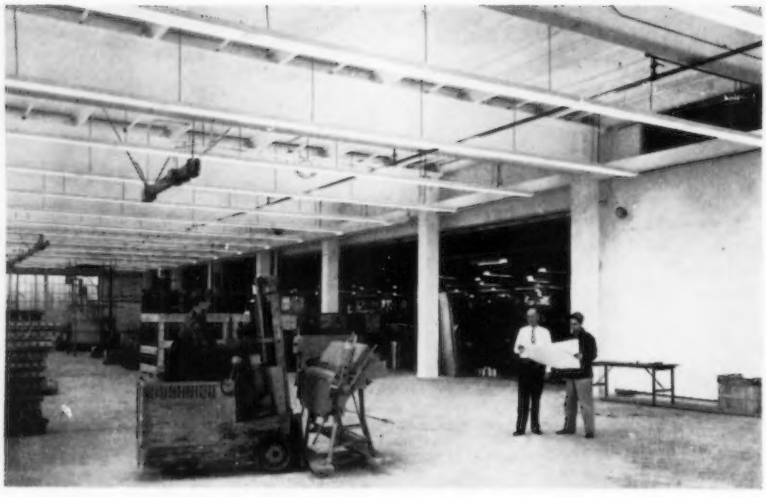

FIGURE 3—New lighting system at left and front, old at right rear.

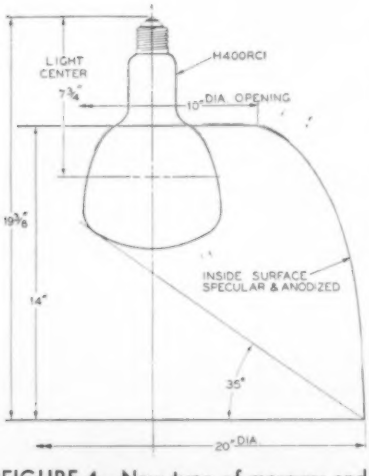

FIGURE 4—New type of mercury and filament fixture.

at this stage of manufacture. It is, therefore, particularly important that the paper making machines be properly lighted. On some parts of the machines it is difficult to supply adequate illumination because of the severe operating conditions. There may be a considerable amount of flying water and pulp which constitutes a severe maintenance problem if the lighting equipment is mounted close to the machine. It is usually necessary to mount the equipment in this position because of the mechanics of machine construction, therefore, anything that can be done to provide better illumination and less maintenance difficulty is highly desirable. Figures 5 and 6 illustrate one solution to this difficult problem. A 150-watt flood lamp is shown mounted on the dryer framing to illuminate the dryer rolls. It will be noted that even though there is a considerable amount of vapor present, the lighting effect is good, and equally important, the self-contained reflector lamp is practically impervious to breakage by bumping or mechanical abuse.

Figures 7 and 8 show two views of a typical paper making machine. One is taken under the hood showing the lighting supplied to the upper part of the machine by the under-the-hood illumination. The lighting consists of 100-watt lamps in vapor-proof equipment mounted on 5-foot centers to supply adequate illumination on this portion of the machine. The other view of this machine shows the general lighting in the room supplied by color-improved 400-watt mercury equipment. Figure 9 shows a typical paper making machine without the hood. In this installation an illumination is supplied by 2-lamp fluorescent units. The units are mounted in semi-continuous rows (8-foot centers in rows), using two rows of equipment per machine. It will be noted that the fixtures in the aisle between the two machines are mounted at an angle in order to provide better vertical illumination on the sides of the machines.

Calendering

The general lighting in the calendering area should provide adequate illumination for the safe and efficient handling of the heavy paper rolls and for the adjustment and service of the calendering machines. Lighting levels in the 70-footcandle range are desirable for efficient operation. The fluorescent type of equipment is most suitable because of the relatively low brightness reflections from the polished rolls and the machine surfaces. The wide distribution of most industrial fluorescent fixtures provide good vertical illumination on the calender.

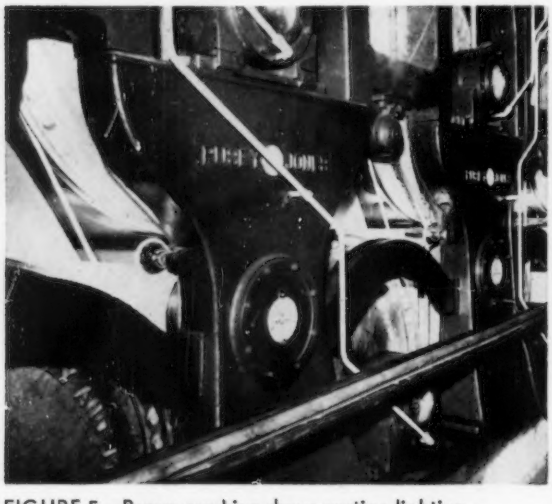

FIGURE 5—Paper machine dryer section lighting.

FIGURE 6—Close-up showing lighting between the dryers.

FIGURE 7—Modern paper mill machine room illumination.

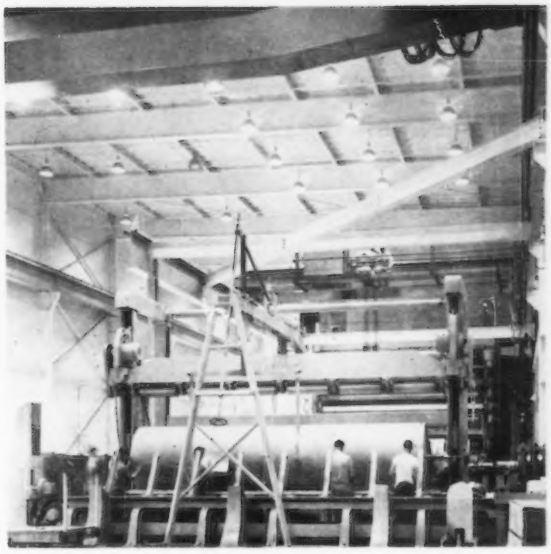

FIGURE 8—Winder lighting is particularly important.

Bugs

In many plants, particularly during the summer months, the problem of eliminating spots on the finished paper produced by insects being trapped in the manufacturing operation, particularly at the calenders, is a difficult one. Some plants have installed yellow lamps in an effort to eliminate this insect problem because most nocturnal insects are sensitive only to blue light. The use of yellow lamps which produce no blue light does tend to minimize the problem. However, the only complete solution to the insect problem is to make the building completely insect-proof by means of fine mesh screens or complete air conditioning.

Beaters and Refiners

The seeing requirements in the refiner and beater areas are usually intermittent and not too critical. Lighting levels of approximately 50 footcandles are desirable for the inspection and adjustment of the machines. A new development in light sources—self-contained reflector lamps—are well-suited to applications of this type. These lamps are available in filament and mercury designs. These lamps will be discussed at greater length under the heading of maintenance.

Chippers and Barkers

Good lighting in this type area is needed due to the hazards involved in handling the bulky material and operating the heavy machinery used in these operations. The reflector type lamps are particularly suitable due to the rapid rate of dirt accumulation in these areas.

Digester Rooms

Modern digester rooms are very similar to control rooms in power plants, etc., and require careful consideration of the lighting installation in order that adequate illumination be provided on the scales, dials and controls. Considerable care should be exercised in order to prevent excessive reflections in the glass meter faces. Another important consideration in this type of area is the proper brightness control of the entire seeing environment. This usually is accomplished by the use of light colors of paint throughout the areas. Figure 10 shows a reel control console color conditioned and lighted. It will be noted that the primary objects of attention are the control dials. This is accomplished by having everything else approximately the same brightness.

Color Matching

The most accurate representation of color is provided by a light source which does not emphasize or subdue any portion of the spectrum. In other

FIGURE 9—Lighting an older machine room where hoods are lacking.

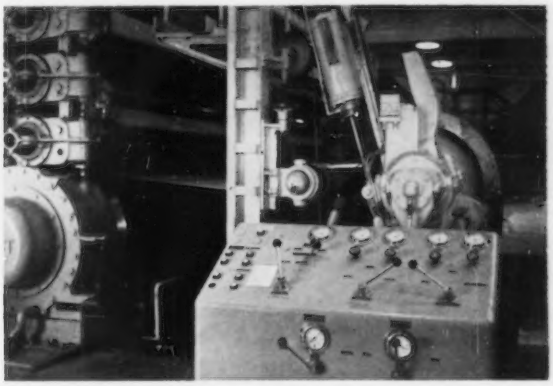

FIGURE 10—Control panel at dry end, properly color conditioned and lighted.

FIGURE 11—(Above) Directional lighting used in paper inspection.

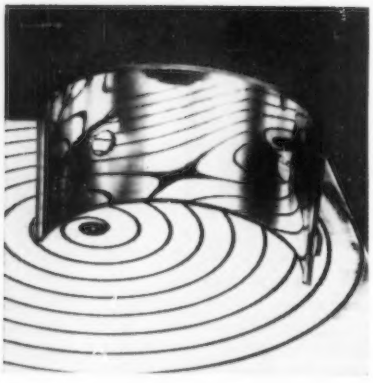

FIGURE 12—Inspection of polished surfaces by reflection.

FIGURE 13—(Below) Section of a well lighted laboratory.

words, a source which has equal amounts of radiation in all colors or portions of the spectrum would be preferred. The deluxe cool white fluorescent lamps approach this optimum much closer than other light sources and are, therefore, the best lamps available today for viewing of colored materials. The deluxe cool white fluorescent lamp is also well adapted to operations where color discrimination, rather than accurate matching is desired. If, however, it is necessary to match two samples it is then desirable to deliberately distort the appearance of the two samples first by lighting them with a source predominantly blue in spectral composition and then lighting them with a source which is predominantly red in spectral composition. If a color match is obtained under these two sources then the samples will match under any other lighting condition. There are few materials which fluoresce or produce visible light when illuminated by ultraviolet radiation. For this reason, the source which is predominantly blue should also contain enough ultraviolet radiation so that these fluorescent effects can be produced. The source which is predominantly red should not contain ultraviolet. The daylight fluorescent lamp is a logical choice for the bluish component and the reddish component can be supplied by filament lamps.

Difficult Seeing Tasks

The inspection tasks are most apt to be difficult visually, although there may be difficult seeing tasks at any stage of the manufacturing process. Critical inspection involves in many cases very difficult seeing problems. These problems can be grouped broadly into three main categories.

In many cases it is only necessary to supply enough lighting so that the operator can use his visual ability to best advantage. In seeing the area over the vats in the paper making machines, it is only necessary to supply adequate illumination.

For some visual tasks a light source having highly directional characteristics is desirable. Figure 11 shows one example of this technique applied to the inspection of finished paper sheets. Where it is necessary to examine the surface of the paper for small imperfections such as wrinkles, tears, spots, etc., the use of these highly directional sources, in this particular case automotive type fog lamps, provides modeling or three dimensional effect on the small irregularities in the paper surface. The slight shadows cast by these irregularities make the detection of defects much easier than with ordinary types of lighting. The fog lamps are particularly suitable for this operation because of the

FIGURE 14—Store's receiving area has upward light, 2-lamp fluorescent equipment.

FIGURE 15—Stock room, lighted with single lamp fluorescent equipment.

sharp cut-off above horizontal. Thus, the operators can work directly facing the units without having high brightness directly in his field of view. It is also possible to utilize fluorescent lamps mounted in the same position with a properly designed reflector to give adequate shielding to the operator.

A third type of lighting effect which is sometimes helpful for difficult seeing tasks is the use of a large area relatively uniform brightness source usually consisting of a bank of fluorescent lamps behind a diffusing media such as opal glass or plastic. This type of source is particularly suitable for the critical inspection of polished surfaces. A calender roll, for example, can be inspected critically for smoothness of finish if a uniform brightness light source is reflected in the surface of the roll. A further modification of this technique is the application of some type of definite pattern on this uniform brightness source. Figure 12 illustrates one application of this technique. In this figure a brightness pattern is being reflected in a bearing cap. The pattern is, of course, distorted by the cylindrical surface as would be expected. However, the pattern should be clean and sharply defined assuming that the surface is optically smooth. In the figure it will be noticed that the reflection is somewhat ragged indicating undesirable chatter marks. This rough surface is what causes the distortion of the image.

Laboratories

The desired working environment in a laboratory is usually somewhere between that of a general office and a manufacturing area. Usually there is a considerable amount of desk work, writing of reports, notation of data, etc., as well as critical observation of processing similar to that out of the manufacturing areas, but often on a reduced scale.

The efficient and accurate performance of the laboratory personnel requires illumination levels in the 100 plus footcandle range for the general activities throughout the area. Figure 13 shows a well lighted laboratory.

The critical appraisal and inspection of products, particularly the darker shades of paper, often requires additional illumination over the inspection area. This phase of lighting was discussed under a separate category, "Difficult Seeing Tasks."

Shipping and Receiving

In the shipping and receiving areas, the most difficult visual tasks consist of making out forms, checking labels and stock, packing and wrapping, etc. These areas should be lighted in much the same fashion as the general manufacturing areas. A 50-footcandle level supplied by upward light, 2-lamp fluorescent equipment in continuous rows on 10-foot centers gives uniform lighting as shown in Figure 14.

For the more casual task of loading, rough crating, etc., lighting levels of 20-25 footcandles are more typical. These may be obtained by omitting one half of the reflectors of a continuous row system, and should the area be used later for manufacturing processes, the higher production lighting level is

FIGURE 16—Office area before relighting and repainting.

FIGURE 17—Office area after relighting and repainting.

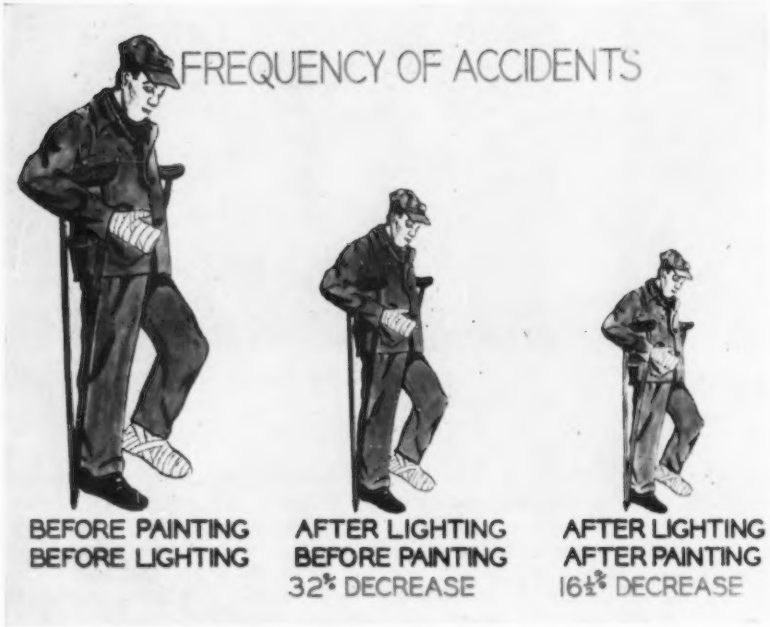

FIGURE 18—Effect on accident frequency of relighting programs at Allis Chalmers.

readily obtained by completing the continuous rows through the installation of the remainder of the reflectors and auxiliary equipment.

In many areas of this kind, a service desk is located adjacent to the stock room. If this is the case, it should be well illuminated for the efficient handling of stock and the record work which is necessary. A continuous row of 12-lamp fluorescent equipment over the length of the counter is usually adequate for this purpose.

Stock and Tool Rooms

In all manufacturing plants it is necessary to devote a considerable amount of space to the storage and handling of tools and small parts. This is usually done in stock bins placed in rows on either side of relatively narrow aisles. The aisles are usually about 3 feet wide and the bins are approximately 7 feet in height. The lighting requirements in an area of this kind are primarily supplying illumination on the vertical surface of the boxes and cartons stored in the bins, and in the bin itself. In all cases the primary requirement is to supply vertical illumination. One of the better methods of lighting this type of an area is by utilizing continuous rows of single lamp fluorescent equipment down each aisle. Figure 15 illustrates a stock room lighted in this manner. It will be noted that the lighting units are mounted in the center of the aisle approximately at the top of the upper bins and that they provide adequate light sideways toward the bins. It is highly desirable that these units be mounted no higher in order that the light reaches the inside of the bins efficiently. It is also very helpful to finish the inside of the bins and floors in light colors to reflect light to all parts of the bins. In some types of bins, small aprons project into the aisle at the lower front of each bin. If this is the case, these aprons should be finished in a high reflective paint in order to redirect some light into the interior of the bin.

Warehousing

There are in general two types of warehousing operation. Active warehousing consists largely of temporary storage of material used in current production or prior to shipping. This type of warehousing justifies lighting levels of 30-50 footcandles in order to facilitate the handling of material and minimize the hazards of trucking traffic.

The other type of warehousing consists of storing materials that are needed only occasionally. These materials may consist of spare parts, special low-demand paper types, etc. The lighting in this type of area is usually a lower level than necessary for active warehousing. Generally, between 20 and 40 footcandles.

Office Areas

The seeing task in the office areas are generally prolonged and often difficult. The lighting should provide a pleasing, comfortable visual environment for the employees. People work better in this kind of surrounding. This has been confirmed many times by experience and actual tests. One of the more recent tests was conducted by the Bureau of Internal Revenue. In the particular area studied, the employees transfer information from income tax returns to key punch cards. When the lighting was changed from 10 to 50 footcandles and light wall and furniture finishes in pleasant colors were provided, the rate of processing cards increased by 5.5%. This improvement was obtained in spite of the fact that the complexity of several forms was increased by as much as 50%. The annual value of this 5.5% increase in performance is twice the cost of renovation. In other words, during the first six months, the increased volume of work produced by the employees had completely paid for the new lighting and redecorating. Figures 16 and 17 show the area where the test was conducted — before relighting and after relighting and repainting.

The trend in lighting is continually toward improved seeing conditions. As new developments in light sources and lighting equipment improve lighting and decrease its cost, more light is demanded. As costs of office operation increase, the most efficient utilization of employee capabilities is more and more imperative. Lighting is a potent factor in this improvement. There are, of course, some office areas, such as lobbies and reception centers, where the seeing tasks are relatively casual and lower lighting levels can be used. On the other hand, there are other office tasks considerably more severe than the average, such as bookkeeping, detail drafting, etc., where higher levels of lighting are appropriate. For tasks of this kind, lighting levels of 100 plus footcandles are desirable.

Visual Environment

It has been indicated previously that good lighting requires a pleasant visual environment.

This means that all brightness in the area should be of the same order of magnitude. Strong differences in brightness create disturbing reactions. High brightnesses, such as are created by bare lamps, and high brightness window areas, cause severe glare conditions which interfere with seeing and induce eye strain and fatigue. Shiny surfaces such as polished or glass desk tops reflect these high brightnesses into the workers' eyes causing reflected glare. It is particularly important that these glare conditions be reduced to a minimum. In order to create a pleasant visual environment it is very important that all surfaces in the room are finished in

light colors. The finishes should be non glossy for comfort and best appearance. If reflections are present, they are distracting and often mask the color and pattern of the surfaces.

There are very few exceptions to the rule that ceilings should be painted white. Without exception they should be of very high reflectance to keep lighting efficiency high and to give a luminous background against which fixtures are seen. The outside surfaces of fixtures should also be of high reflectance, for the same reason—to minimize the brightness difference between the inside and outside of the units.

The side walls from either the ceiling or the fixture line down should be finished in a color which has a reflectance of 50-60%. Floor areas should have at least a 20% reflectance, while furniture and equipment finishes should be 30-35%. The desk tops and other work surfaces are especially important and should reflect 30-35% of the light that strikes them. By utilizing materials of this reflectance a comfortable overall brightness condition is created which contributes to higher production and improved employee morale.

Some care should be exercised in choosing particular colors so they harmonize with each other, but many different shades can be used as long as they are handled in a harmonious manner.

Maintenance

One of the most important problems in lighting of paper plants is the severe rate of depreciation due to dust and dirt accumulation on lighting equipment, and other room surfaces. It is particularly important to keep in mind that a lighting system is installed for one purpose only, namely, to supply the necessary amount of light, at the minimum cost, and in a manner to help create a comfortable visual environment. In many plants throughout the country under existing maintenance practices (no regular cleaning), the lighting system is delivering only 40% or less of the light that it is capable of producing. By a very small investment in a cleaning and lamp replacement plan, often less than 20% of the operating cost of the lighting system, it is quite possible to realize *twice as much light* as the system is presently producing. Under these conditions, unit cost of light (the cost per footcandle actually delivered on the work) has been reduced by nearly one half.

Often maintenance costs can be reduced appreciably in very dirty locations by using reflector type filament and mercury lamps. Since these lamps have their reflectors sealed inside, dirt and dust collection on the sides of the lamps does not reduce light output. Cleaning can often be eliminated where these lamps are used. The new fluorescent lamps offer possibilities for reducing maintenance costs also, by reducing the number of lamps and equipment to be maintained.

No lighting system remains effective for any considerable length of time unless a definitely planned and well executed maintenance program is carried out.

Safety

The problems of safety in any manufacturing process are always of prime concern. Good lighting reduces the hazards in any process by insuring that the worker can see and avoid dangers. The chart in Figure 18 illustrates the effect on accident frequency of relighting programs in the Allis Chalmers Milwaukee plant. It will be noted that this chart includes not only results from relighting, but repainting as well. Accidents in erection shops were reduced by 43% by this improvement in the workers' seeing environment. Admittedly, such spectacular results cannot always be expected, but this chart does indicate the close inter-relation between good lighting and good safety records.

Summary

Good plant lighting can no longer be considered as a luxury nor as just a necessary overhead item. It can and should be considered as an investment in efficient and economical operation. Modern successful concerns insist on the best in tools, business machines, and labor. It is equally important that they insist on the best in lighting installations; lighting designed to be adequate in quantity, of such a quality that it will be comfortable for the workers' eyes and will do its part in creating a pleasant, efficient working enviroment. It is our hope that the examples and discussion presented here will be of help to the paper industries in making good lighting—a productive tool in your progressive manufacturing operations.

Presented at the Technical Conference sponsored by the Paper Sub-Committee, American Institute of Electrical Engineers, March 28-29, 1957, Atlanta, Ga.

NEWS OF ASSOCIATIONS

Special Arrangements For Whiteface Outing

This year the Empire State Paper Assn. annual outing at Whiteface takes place in the same week as the Fall N. P. T. A. Show in Chicago.

Monroe G. Bingeman, Association President, announced that for the convenience of those persons who will be going directly from the N. P. T. A. meeting to Lake Placid, a special car is being arranged on the New York Central, which will leave Chicago the morning of September 18 and arrive at Lake Placid, N. Y. Thursday morning, the 19th. Departure time from Chicago is 11:45 A. M. C. D. T. and arrival at Lake Placid the next day is 8:35 A. M. E. D. T.

The affair at Whiteface, as in the past, is jointly sponsored by the Empire State Paper Assn. and Allied Paper Salesmen's Assn.

Pacific TAPPI Elects New Officers at Gearhart

At the recent joint meeting of the Pacific coast division of the Superintendents Assn. and the Pacific section of TAPPI, the TAPPI group held its annual election of officers.

Norman S. Lea, Scott Paper Co., Everett, Wash., is the new chairman of the section. First vice-chairman is Paul S. Bellington, Weyerhaeuser Timber Co., Longview, Wash. Robert H. Smythe, the Ray Smythe Co., is secretary-treasurer.

Gallay Named to International Committee

Dr. Wilford Gallay, director of Research, E. B. Eddy Co., has been appointed to the Pulp and Paper Committee of the International Union of Pure and Applied Chemistry (IUPAC). This body is world-wide in scope, with outstanding scientific organizations in each of the principal countries of the world as constituent bodies.

The International Union has as its function the dissemination and exchange of information in chemistry on an international level, with a view to collaboration among nations.

The Pulp and Paper Committee to which Dr. Gallay has been appointed consists of seven members, chosen from the world at large, to further international collaboration in the field of pulp and paper. Meetings are held biennially in Europe, the next meeting being scheduled for London, England, in September 1957.

Mill subscription survey reveals over 6 readers per copy of PAPER TRADE JOURNAL

The Question

Periodically the editor of PAPER TRADE JOURNAL writes to companies which have mill subscriptions to PAPER TRADE JOURNAL to find out who reads these mill copies. The request reads as follows:

> **"Your mill subscribes to at least one copy of PAPER TRADE JOURNAL in the name of the mill. You can be of tremendous help to me if you will indicate below just who reads these mill copies."**

The Response

Two hundred and six replies were received, of which 182 showed the breakdown requested. These replies indicated 1,213 mill readers, an average of 6.67 readers per mill copy.

The Results

Analysis of the titles of readers show the following breakdown:

Officers	10.4%
Mill managers, including superintendents	18.2%
Assistant managers	5.2%
Technical directors	24.6%
Engineers	16.4%
Purchasing Agents	3.3%
Foremen	5.5%
Department heads, etc.	16.4%
Total	**100.0%**

The Projection

Applying this percentage breakdown to all mill subscriptions and projecting the average of 6.67 readers per mill subscription, the following readers are indicated:

Officers	694
Mill managers, including superintendents	1,215
Assistant managers	347
Technical directors	1,643
Engineers	1,095
Purchasing Agents	224
Foremen	367
Department heads, etc.	1,095
Total	**6,680**

The Individual Subscribers

In addition to mill subscriptions, 2,979 individual mill men subscribe to PAPER TRADE JOURNAL. Counting these at one reader per copy, the breakdown is as follows:

Officers	441
Mill managers, including superintendents	555
Assistant managers	208
Technical directors	322
Engineers	362
Purchasing Agents	57
Foremen	541
Department heads, etc.	493

Total Indicated Readership

When indicated readers are added to individual subscribers, we note the following totals:

Officers	1,135
Mill managers, including superintendents	1,770
Assistant managers	555
Technical directors	1,965
Engineers	1,457
Purchasing Agents	281
Foremen	908
Department heads, etc.	1,588
Total	**9,659**

Conclusion

The unusually high readership per mill copy, combined with individual mill subscriptions, goes far toward explaining the fact that PAPER TRADE JOURNAL rates as the most useful publication in the field among mill men.

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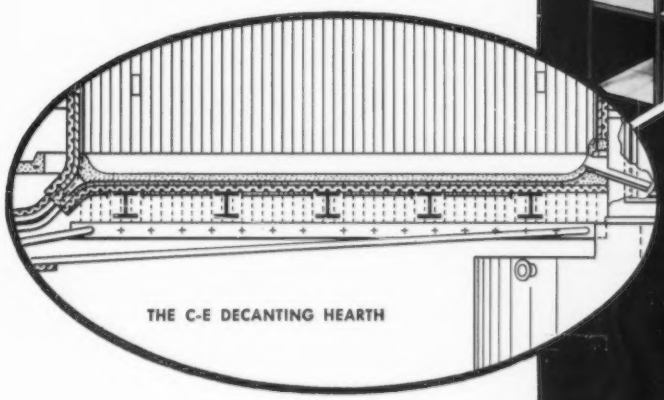

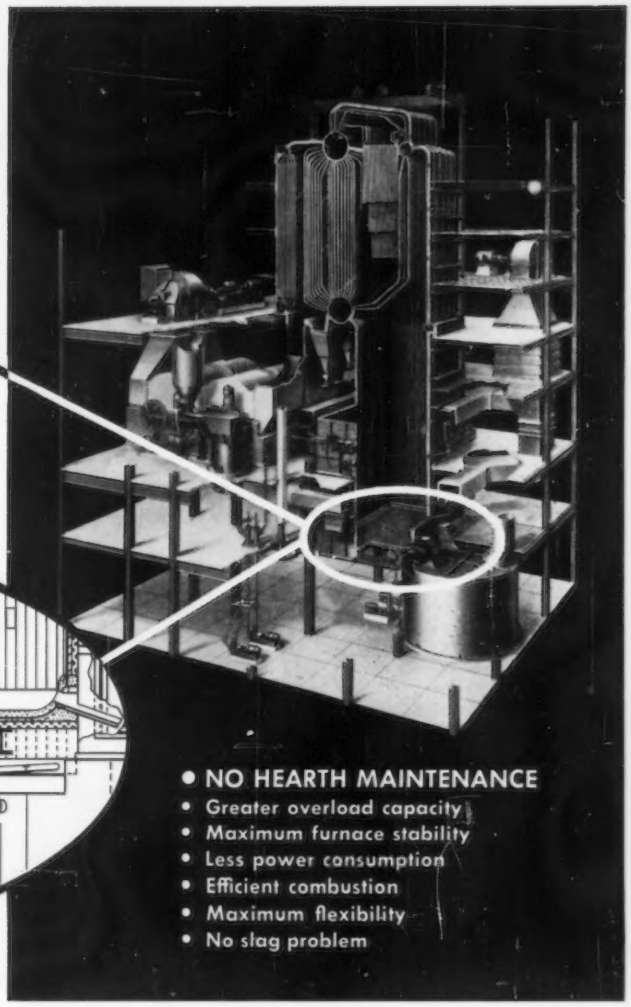

There is no recovery unit downtime for hearth repair with the C-E Decanting Hearth. Service-proved by the equivalent of more than fifty years of cumulative operating experience, this exclusive design feature puts an end to downtime and the cost and inconvenience it entails. With this design, a layer of chilled smelt is held in contact with the water-cooled furnace floor. The molten smelt rides on top of the chilled layer and leaves the furnace without ever touching the hearth refractory or the floor tubes.

This design feature is one result of Combustion's continuing efforts to make a good product better. Through the years, these efforts have produced many similar advantages. From the smallest to the world's largest, every C-E Recovery Unit offers you consistently high reduction performance, uniform fuel bed, efficient burning, a cleaner boiler, uniform gas flow, less steam for soot blowing, cleaner superheater surface, greater overload capacity, less power consumption and minimum stack losses. Good reasons all, why—before you buy—you should *SEE* C-E.

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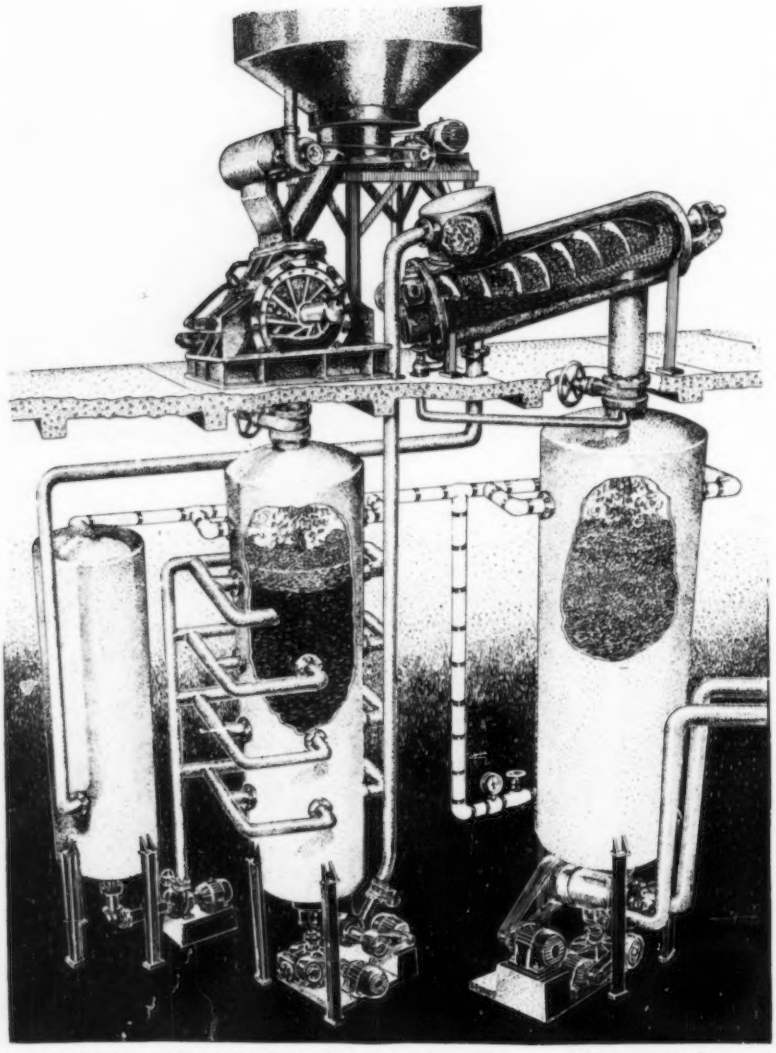
New Continuous Cooking System for Chemical and Semi-Chemical Pulps

L. G. Durant,

President, Condi Engineering Corp., Pittsfield, Mass.



SCHEMATIC PRESENTATION of the Condi continuous pulping method.

One of the principal advantages of continuous process over a batch-wise operation lies in accurate and continuous control of the quality and quantity of the end product. Nowadays in most industries product manufacturing is done continuously in order to take advantage of the inherent controllability, efficiency, and economy associated with continuous methods.

In the Condi system, the process has been broken down into three stages:

1—Preparing the chips for ready acceptance of the cooking liquor.

2—Impregnating the chips with cooking liquor in such a manner to (1) allow the use of lower but more uniform concentrations of cooking liquor (2) allow the chemical to diffuse uniformly through the chips.

3—Cooking in the presence of the desired amount of chemical.

Process and Operation

Chips are prepared and stored in the conventional manner. These chips are then fed continuously to a small auxiliary chip bin (A in Figure 1), thence continuously by a rotary bin discharger (B in Figure 1) operating on a vertical shaft and driven by a variable speed motor.

From the bin discharger the chips are conducted into the steaming zone of the impregnator (D in Figure 1) through the Condi multi-vane feeder (C in Figure 1). This feeder has a series of equalizing pipes whereby the steam pressure is progressively lowered from the feeder discharge to the feeder inlet, thus reducing pressure and quantity of steam exhausted from the impregnator. A motor driven exhaust blower removes the residual low-pressure steam from

the up-coming feeder pockets and discharges it into the auxiliary bin for pre-heating the chips. (See Figure 2 showing method of equalizing pressure, also Figure 3 a picture of the feeder).

Preparation of Chips for Impregnation

The chip level in the impregnator is automatically controlled by a chip level controller which varies the speed of the bin discharger drive motor.

This step consists of pre-steaming the chips in the upper part of the impregnator at a super-atmospheric pressure and temperature for a very few minutes while continually and automatically relieving the non-condensible gases. (Time consumed probably about two to five minutes, depending on wood, wood moisture and other conditions).

Controlled pre-steaming is an important contributing step in the process. It is a part of the Va-Press process developed and patented by Dr. J. H. Ross and the Pulp and Paper Research Institute of Canada. The following theory has been suggested:

It appears that steaming in this manner will not only drive off the air surrounding the chips but will also result in the air within the chip being compressed and mixed with steam. At the same time, the air adsorbed on the walls of the interstices will be replaced by molecules of water, perhaps to the extent of an actual liquid layer. The walls of the interstices are now in such a partially wetted condition that when the liquor is introduced it will wet these walls and the chemical which it carries will immediately diffuse into them. Since the air is compressed and the walls of the interstices are wetted, the air cannot serve as a serious impedance to the penetration by the cooking liquor as appears to be the case when cooking liquor is introduced without previous steaming at elevated pressure and temperature. This is a key step in the process. The quality of pulp produced gives clear evidence of rapid and thorough penetration since the resulting pulp is unusually uniform as regards the ab-

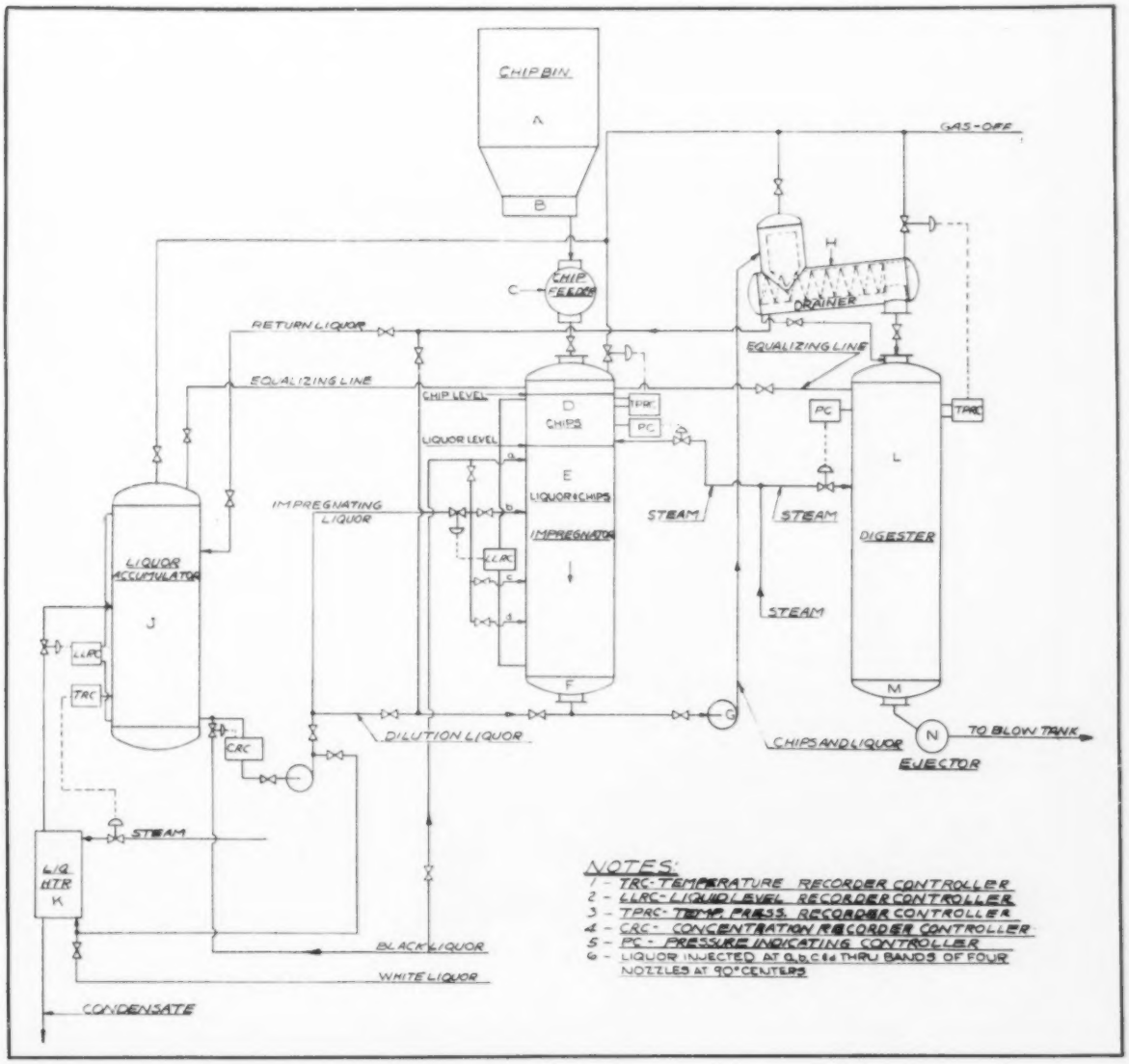


FIGURE 1—Flow and instrument diagram for the pulping system.

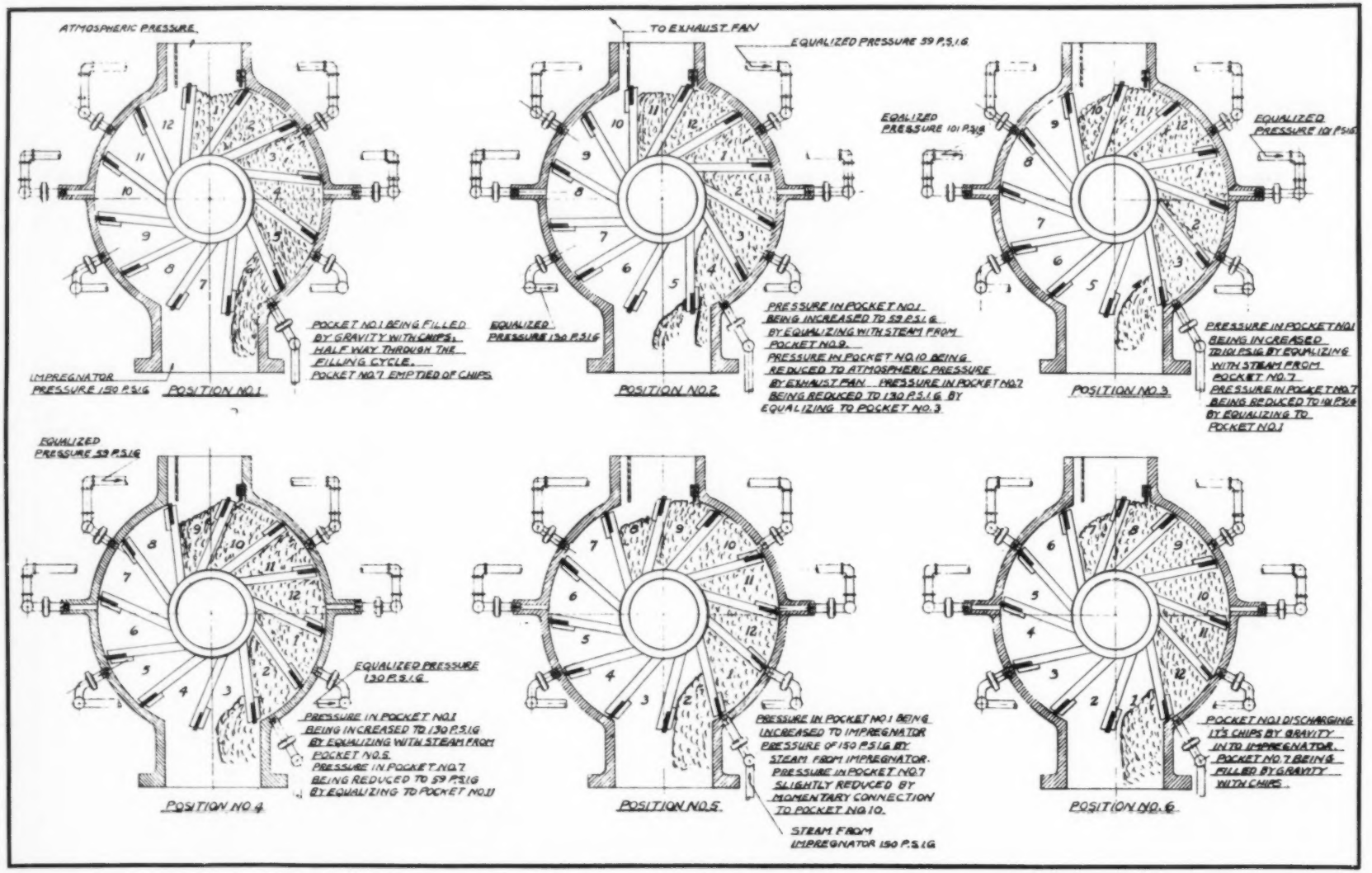

ATMOSPHERIC PRESSURE
IMPREGNATOR PRESSURE 150 P.S.I.G
POSITION NO.1
POCKET NO.1 BEING FILLED BY GRAVITY WITH CHIPS½ HALF WAY THROUGH THE FILLING CYCLE.
POCKET NO.7 EMPTIED OF CHIPS
TO EXHAUST FAN
EQUALIZED PRESSURE 59 P.S.I.G
EQUALIZED PRESSURE 130 P.S.I.G
POSITION NO.2
PRESSURE IN POCKET NO.1 BEING INCREASED TO 59 P.S.I.G BY EQUALIZING WITH STEAM FROM POCKET NO.9.
PRESSURE IN POCKET NO.10 BEING REDUCED TO ATMOSPHERIC PRESSURE BY EXHAUST FAN. PRESSURE IN POCKET NO.7 BEING REDUCED TO 130 P.S.I.G BY EQUALIZING TO POCKET NO.3
EQUALIZED PRESSURE 101 P.S.I.G
EQUALIZED PRESSURE 101 P.S.I.G
POSITION NO.3
PRESSURE IN POCKET NO.1 BEING INCREASED TO 101 P.S.I.G BY EQUALIZING WITH STEAM FROM POCKET NO.7
PRESSURE IN POCKET NO.7 BEING REDUCED TO 101 P.S.I.G BY EQUALIZING TO POCKET NO.1
EQUALIZED PRESSURE 59 P.S.I.G
EQUALIZED PRESSURE 130 P.S.I.G
PRESSURE IN POCKET NO.1 BEING INCREASED TO 130 P.S.I.G BY EQUALIZING WITH STEAM FROM POCKET NO.5.
PRESSURE IN POCKET NO.7 BEING REDUCED TO 59 P.S.I.G BY EQUALIZING TO POCKET NO.11
POSITION NO.4
PRESSURE IN POCKET NO.1 BEING INCREASED TO IMPREGNATOR PRESSURE OF 150 P.S.I.G BY STEAM FROM IMPREGNATOR. PRESSURE IN POCKET NO.7 SLIGHTLY REDUCED BY MOMENTARY CONNECTION TO POCKET NO.10.
STEAM FROM IMPREGNATOR 150 P.S.I.G
POSITION NO.5
POCKET NO.1 DISCHARGING IT'S CHIPS BY GRAVITY IN TO IMPREGNATOR. POCKET NO.7 BEING FILLED BY GRAVITY WITH CHIPS.
POSITION NO.6

FIGURE 2—Schematic diagram of the multi-vane feeder showing six positions feeding into the impregnator.

sence of undercooked or overcooked portions.

Here is a continuous pulping system which is radically different from other existing and proposed methods. It is the first system designed specially for the Va-Press process and for cooking in the vapor phase.

Impregnating the chips

The pre-steamed or conditioned chips are then put through a bath of concentration controlled cooking liquor (Zone E in Figure 1), the temperature of which is also controlled at any desired point which will aid penetration but will retard cooking. It is only necessary to hold the chips in contact with the cooking liquor for a relatively short time, at the end of which time the chemical will be thoroughly diffused throughout the chip. Impregnating time is automatically regulated by continuous control of the liquor level while the chips are moving through the impregnating area at a pre-determined rate. Of particular importance is the arrangement of the liquor inlet nozzles! There are four areas in which new liquor of controlled concentration can be applied as the chips move downward through the impregnator. (See a, b, c, and d in Figure 1). This allows the use of lower initial chemical concentration and reduces the probability of early chemical attack on the cellulose due to high concentrations. The Condi design permits the use of a wide range of controlled impregnating liquor temperatures, regardless of the steam pressure and temperature during chip steaming and cooking.

To further explain, if we assume that we wish to cook in the digester at 178°C., which is equivalent to 120 p.s.i.g. steam, then in order to have the entire system under the same pressure we would use a like pressure in the chip steaming section at the top of the impregnator. The temperature of the incoming liquor, however, need not necessarily bear any relation to the steaming or cooking pressures and temperatures. The liquor which is continually circulating is set at any desired temperature by passing it through the heat exchanger (K in Figure 1). The volume of liquor passing through and along with the chips in the impregnator is such that the temperature picked up at the steam-liquor interface is nearly negligible and can be compensated for.

The work of Paranyi and Rabinovitch[1] and later Woods[2] investigating the rate of penetration of water into wood concluded that pre-steaming at super-atmospheric pressure increased the rate of penetration appreciably. Time to 90 percent penetration can be reduced to about one-sixteenth of the value without pre-treatment. The pre-steaming time involved amounts to about five or six minutes at pressure similar to the subsequent cooking pressure as opposed to 30 minutes or more at atmospheric pressure, thus showing the advantage of steaming at pressure.[3]

Usually it is not possible to take full advantage of this pre-treatment and rapid rise to cooking temperature in batch equipment because of the inherent design of the system in which 1) the boiler house will not supply the steam and 2) liquor cannot be supplied in a manner to assure uniform treatment of all the chips. Some mills take partial advantage of pre-steaming technique simply by pre-steaming at atmospheric pressure which is about all the equipment will allow.

Experiment has shown that because Va-Press provides us with a means of rapid penetration, it is possible to use temperatures during the impregnating stage which contribute to mild cooking without detrimental effects, provided these conditions are adequately controlled.

In kraft cooking, for example, there is a major disadvantage to the use of strong alkali and high temperature in the early stages of the cook where there is a rapid loss of carbohydrate. Under conditions of strong alkali at the start of the cook, it is possible to promote excessive loss of pentosan with the ultimate result of lower yield and degraded physical characteristics. In the Condi system, where liquor is injected at points a, b, c, and d (Figure 1), it is possible to protect against this danger by the use of lower chemical concentration at point (a). New liquor being added in areas b, c, and d will fortify the chemical supply to the wood in order to supply enough chemical to complete the cook but the use of milder concentration in the early stages reduces the certainty of drastic carbohydrate attack. This is a very important part of the Condi design, as without this feature and the effect of liquor circulation which the design provides, it would be necessary to 1) use conventionally long impregnating times at low temperature or 2) impregnate at higher temperatures with stronger alkali and with consequent loss of yield and physical properties. The first would entail the use of too much equipment, would cost too much and the equipment would have limited flexibility. The second provides us with the opportunity of extremely flexible design, low cost equipment and the surety that pulp production can be controlled to produce the ultimate in quality and uniformity at any yield desired.

A scraper type evacuator at F (Figure 1) in the bottom of the impregnator has been carefully designed to ensure uniform withdrawal of the chips over the entire cross-section of the vessel. The evacuator, which is also a metering device, is driven by a variable speed DC motor, the speed of which is changed by a signal from the digester chip level controller.

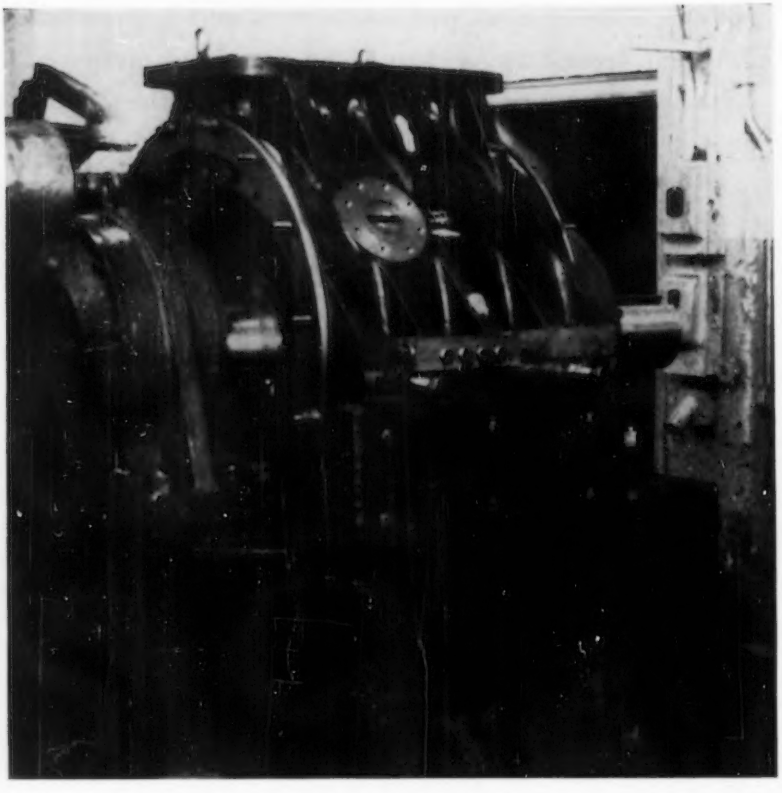
The impregnated chips and liquor are delivered by the evacuator to the eye of a chip transfer pump (G in Figure 1). This chip transfer pump is driven at a constant speed and pumps a constant gallonage to the drainer (H in Figure 1). The fact that the pressure in the steaming zone of the impregnator and the digester can be maintained substantially equal minimizes the power required for the chip transfer pump.

In the Condi design, the liquor is always moving through a column of chips and is being replaced by new liquor. In addition, liquor is used to convey the chips from the impregnating zone to the drainer, so that at the time of drainage there is a high liquor to wood ratio present. This is liquor which still contains a goodly amount of chemical and can be re-fortified with normal white liquor for re-use. Most of this excess liquor is therefore drained off and returned to the accumulator (J in Figure 1) still under pressure where it is fortified with fresh pre-heated liquor for re-use (K in Figure 1). The chips now pass from the drainer into the digester (L in Figure 1).

Cooking Stage

The chemically impregnated chips are now cooked at pre-determined temperature for a pre-determined time. In the case of easy-bleaching softwood kraft, for example, the time should be on the order of 30 minutes. In the cooking stage, it is possible to carry lower liquor to wood ratios than normally considered practical because the

[1] Paranyi, Miss N. I., and Rabinovitch, W.—Pulp & Paper Magazine of Canada, Vol. 56, no. 3, 1955.
[2] Woods, Mrs. N. I.—Pulp & Paper Magazine of Canada, Vol. 57, no. 5, 1956.
[3] Hart, J. S.—In Developments at Pulp & Paper Research Institute of Canada.



FIGUE 3—Condi multi-vane feeder is equipped with pressure equalizing pipes.

effective chemical is already being carried in the chip. It is, however, considered wise to carry a moderate amount of free liquor along with the chips. A digester evacuator (M in Figure 1) similar to that in the impregnator provides for the transfer of the cooked chips into the Condi axial-flow ejector (N in Figure 1).

In the ejector the stock is conveyed to two adjustable orifices in the end flanges. Steam pressure in the ejector blows the pulp through these orifices into the blow tank. A continuous cleaning mechanism prevents plugging of the orifices.

It will be obvious that no matter what type of pulp produced or kind of chemical used, the problem of penetration will always exist. Poor penetration results in poor pulp. The Condi system is designed to accomplish penetration and to promote rapid and controlled cooking and is therefore applicable to any type of pulp. The process, itself, is admirably suited to continuous cooking since the entire process of chip preparation, penetration, transfer, and cooking can be carried on at the single super-atmospheric pressure selected as best suited for the particular wood, the cooking conditions to be used, and the grade of pulp desired. This knowledge has allowed Condi engineers to design equipment which is much simpler in construction and operation than that used where several different elevated pressures are required.

It has been mentioned earlier that one of the principal advantages of a continuous process over a batch-wise operation is accurate, continuous control of the quality and quantity of the end product. By controlling, over a broad range, the three phases of the Condi cooking system; namely, 1) Chip Preparation, 2) Chip Impregnation, and 3) Cooking, it is possible to produce pulps with a wide range of characteristics. There are several new grades of pulp coming into use these days—pulps of high yield with special characteristics which offer good advantages in many grades of paper. Bit by bit, we expect to see the use of these new grades increase and being used as a substitute, at least in part, for low yield conventional pulps in many grades of paper. It is certainly conceivable that by properly controlling this three-phase system, pulps tailor-made for a specific end product can be delivered from the digester.

Controls and Flexibility

A description of the controls shows the flexibility of this system. A chip level controller maintains a constant level of chips in the top portion of the impregnator. The height of the chips regulates the speed of the bin discharger motor.

A constant level of pre-heated cooking liquor is maintained in the impregnator below the chip level by a conventional differential-pressure level controller. A conventional pressure controller maintains a constant pre-determined pressure in the impregnator. A temperature controller in the top of the tank maintains impregnator temperatures by positioning a throttle valve in the relief line, thus venting non-condensible gases from the chips during pre-steaming.

Since the chips are being evacuated continuously from the bottom and fed continuously into the top of the impregnator at a constant rate, pre-steaming time is regulated by the difference between the liquor and the chip levels and impregnation time is controlled by the liquor level. Thus in Phase 1, (chip preparation or pre-steaming phase) the two controllable variables, time and temperature, are regulated accurately and continuously at a predetermined point. The "control point" or either or both of these variables can be pre-set to any desired value.

In Phase 2 (the impregnation phase) there are three controllable variables; namely, time, temperature, and liquor concentration. Time, of course, is maintained by controlling liquor level in the impregnator as described above. A temperature controller regulates the liquor temperature. Accumulator liquor level is maintained in the same manner as in the impregnator. A conductivity cell in the liquor line to the impregnator controls liquor concentration.

In Phase 3 (the cooking phase) since the liquor concentration has already been set, the controllable variables are time and temperature. A digester chip level controller regulates the speed of the impregnator evacuator motor. Temperature and pressure controllers in the digester are identical to those in the impregnator. Once the desired control points of the three phases are set, these values are continuously and automatically maintained for any given throughput rate.

To demonstrate the sequence of operations, let us assume that the operator wants to increase throughput. The steps are as follows:

1 Operator increases digester evacuator speed.

2 Digester chip level starts to drop. Impregnator evacuator motor speeds up. "Cooking time" indicator reads low.

3 Operator adjusts digester chip level controller "set point" by raising controller until "cooking time" indicator indicates proper value.

4 "Impregnating time" and "steaming time" indicators read low. Chip level starts to drop in impregnator. Chip bin discharger motor speeds up.

5 Operator adjusts "set point" of impregnator chip level controller by raising controller and liquor level controller until "impregnating time" and "steaming time" instruments indicate the proper values.

Thus, by making four simple manual adjustments, the operator has changed throughput without changing the conditions in any of the three stages of the cook. He can, also, of course, change any single control point without disturbing conditions in any other phase of the operation.

Conclusions

The system described here has the attraction of lower investment cost in equipment and requires smaller building space. For example, a 300 ton per day easy-bleaching kraft unit can be installed in floor space of about 25′ x 25′. In addition to savings in initial investment for the cooking equipment, there would be other possible savings in such items as chip conveyor, blow tank, blow heat recovery system, hot water storage, steam generators, turbines, etc. Better pulp uniformity also suggests savings in refiner capacity, screen capacity and paper machine operation.

It has long been held inevitable that continuous pulp producing methods will supersede batch methods. Here is a system which has all the virtues of: controlled conditions of progress, no thermo-cycling, continuous removal of non-condensible gases, control of liquor and steam flow, no pocketing, stabilized temperature and liquor concentration and other conditions through the system, uniform boiler load, uniform heat recovery, and removal of the human factor, to a major degree, which is an important consideration in any manufacturing process.

BANQUET TABLE SCENE shows L-R: Dwight L. Stocker, president of Kalamazoo Paper Co.; Dr. Willis F. Dunbar, banquet speaker; Dr. Paul V. Sangren, president of Western Michigan University; Miss Lydia Siedschlag, of the WMU Art Department; Dr. Russell Seibert, WMU vice president, and James A. Wise, president of Kalamazoo Paper Co.

WMU P&P Conference

Predictions of radically-changed educational programs in colleges and universities, with greatly increased emphasis on research and technology were combined with a picture of rapid progress of the Paper Technology Department at the first annual Pulp and Paper Conference held June 14 and 15 at the new Paper Industry Laboratories at Western Michigan University.

Climax of the conference came when Bert H. Cooper, vice-president of the Kalamazoo Paper Co., and past chairman of the Advisory Committee on Paper Technology at Western Michigan was granted the honorary degree of Master of Science. Mr. Cooper was presented for the degree by Dr. Russell H. Seibert, vice-president of the university, in charge of academic affairs.

Grave problems of the "new world" and an oncoming tidal wave of new students will force Western Michigan University and other institutions of higher learning to break with traditions of the past in training young people, Dr. Willis F. Dunbar, professor of history at the university, told a banquet crowd of 70 paper men the night before.

The speaker forecast a "new university in a new kind of world" in his talk which highlighted the banquet. Current history indicates, he suggested, that the world indeed is facing vast changes which are making it entirely a new world from that known by the last generation.

The conference got under way Friday afternoon after a tour of the new Paper Industry Laboratories in which papermakers from Michigan and other Midwestern states were shown the new facilities dedicated this spring.

Dr. Alfred Nadelman, head of the WMU Paper Technology Department, later told the visitors that friends in the paper industry had contributed $184,000 in pledges toward construction of the building. This was supplemented by $125,000 granted by the Michigan legislature.

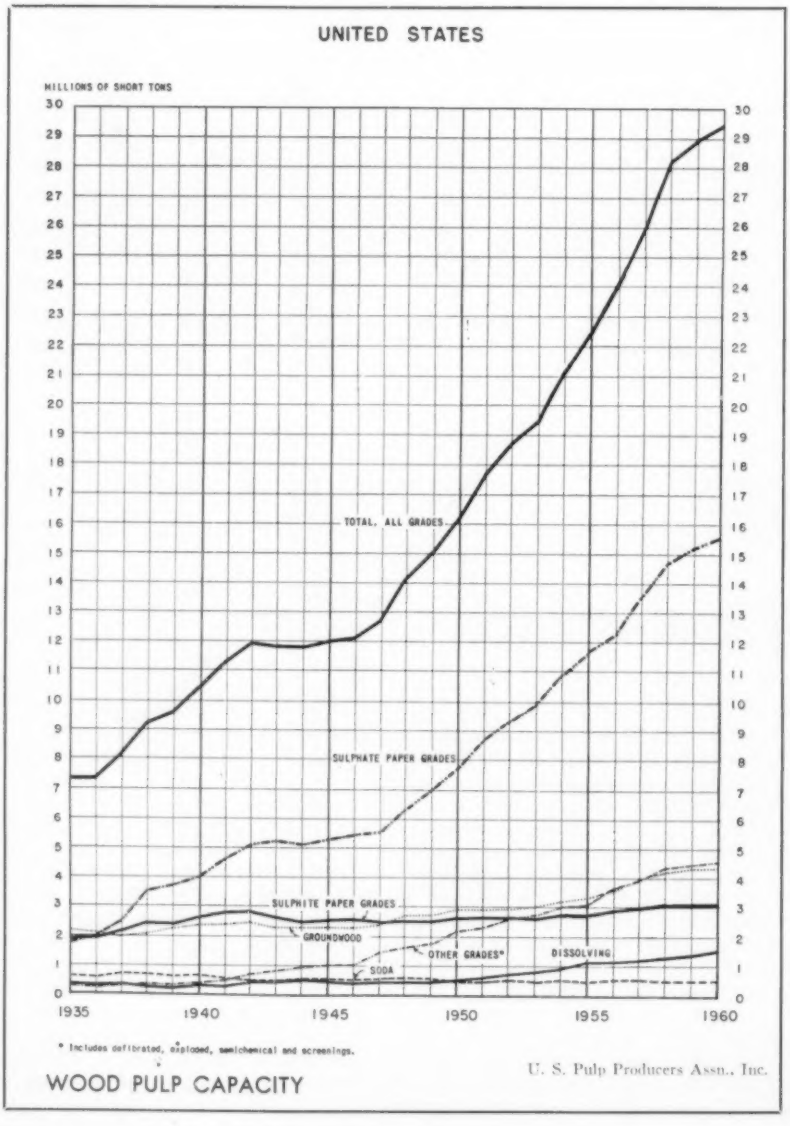
"Western Michigan University Looks to the Future" was the theme of welcoming talks by university officials as the papermakers convened in the Laboratories auditorium for the afternoon sessions.

(Continued on Page 51)

Current Pulp Situation and Outlook For Wood Pulp Economy of North America

J. L. Ritchie

Exec. Sec., U. S. Pulp Producers Assn., Inc.



The appropriate frame of reference for a study of wood pulp supply and requirements, in our judgment, is North America.

About 64 percent of Canada's total paper and paperboard production is shipped to the United States, and about 65 percent of her market pulp production. Of the total volume of paper and paperboard currently being consumed in the United States, about 23 percent is based, in one way or another, on Canadian fiber.

What happens to Canadian pulp supply, therefore, will have a direct bearing upon conditions in United States pulp and paper markets, and, conversely, what happens to markets here will have an equally important bearing upon pulp and paper operations in Canada.

For this reason, it is the relative balance of *continental* supply and requirements, current and prospective, that we propose to examine.

Current Position

The current position of the over-all wood pulp economy of North America can be briefly stated.

North American pulp production so far this year has just about equalled production in the corresponding months of last year. North American capacity, on the other hand, is 6½ percent higher than a year ago. In other words, using January 1956 as a base, the production index has remained at 100, while the capacity index has moved up to 106½. This relationship suggests that the average operating rate should be about 6 percent lower than a year ago. This, in fact, represents the current position of the North American wood pulp economy; it reflects, of course, the average current position of all industries that use wood pulp.

Increases in North American capacity, in recent years, have not been out of line with increases in pulp requirements. High operating rates have attested to that. A levelling off of the demand trend, rather than excessive expansion, has been primarily responsible for the decline in operating rates that has occurred in the past six months.

Intermediate Outlook

Next, let's focus for just a few minutes on the outlook for the *Intermediate* Term—which we shall define for our purposes as the period beginning January 1, 1958 and ending when a normal balance of supply and requirements might be achieved.

Concern about the outlook for this intermediate term began to develop within the industry well over a year ago. Almost certainly, the intermediate term will be a period in which some basic adjustments will be required both in the overall economy of North America and in the North American fiber economy. Within the fiber economy, however, the prospect of achieving market balance within a reasonable time appears much brighter today than it did a year ago.

A year ago, there was every indication that the expansion of wood pulp facilities in North America might continue for several years longer at the accelerated rate that was then clearly indicated for 1957. If this had happened, we would have reached 1960 with North American pulp facilities at least three years ahead of the requirements timetable.

Fortunately, however, this is *not* the current prospect. In recent months, North American expansion programs involving at least five million tons of pulp capacity appear to have been deferred. As a result the rate of increase in North American pulp capacity will decline sharply in 1958 and 1959. The scheduled capacity increase from January 1, 1958 to January 1, 1960, it is now clear, will total, in the aggregate, 1.8 million tons; in other words, the scheduled rate of growth in North American productive capacity over this two-year period will be just about *half* that justified by the historical trend in recent years.

The supply/demand outlook for the intermediate term, therefore, must be reassessed in the light of this very substantial reduction in the rate of scheduled expansion.

New capacity surveys, conducted along parallel lines in the United States and Canada, now permit reasonably exact measurement of the current phase of the wood pulp expansion cycle. They reveal that the total increase in North American capacity in the four-year period from January 1, 1956 to January 1, 1960 will have been 22½ percent. If demand over this same four-year period increases at the rate of 5 percent per year, the aggregate increase in requirements will have been 21½ percent.

Thus, the favorable balance of supply and requirements that prevailed in the North American fiber economy in early 1956 will have been restored by early 1960—*provided*, and this is a very important proviso, demand trends by that time are back on their historical timetable.

Presented at the meeting of the National Paperboard Assn., The Greenbrier, White Sulphur Springs, W. Va., May 21-22, 1957.

WMU Conference

(Continued from Page 49)

Dr. Paul V. Sangren, president of the institution which was granted university status during the last session of the Michigan legislature, told the crowd that projections of enrollment advances and population trends indicate that the present enrollment of over 6,000 may jump to 20,000 by 1975.

Dr. Robert A. Diehm, professor of paper technology, presided over a session then at which members of the senior class of 1957 presented condensations of research reports they had assembled.

He then announced winners of two $50 cash prizes awarded by the Kalamazoo Valley Section of the Technical Association of the Pulp and Paper Industry.

One went to Thomas Murwin, senior student from Menominee, Mich., in option 1, the technical field. The second went to William Somers, Kalamazoo, in option 2, the administrative field.

Student theses reviewed were those of Murwin, Maynard Nieboer of Kalamazoo, Robert Yin of Manila, P. I., Henry Rohs and Robert Shaw, both of Kalamazoo.

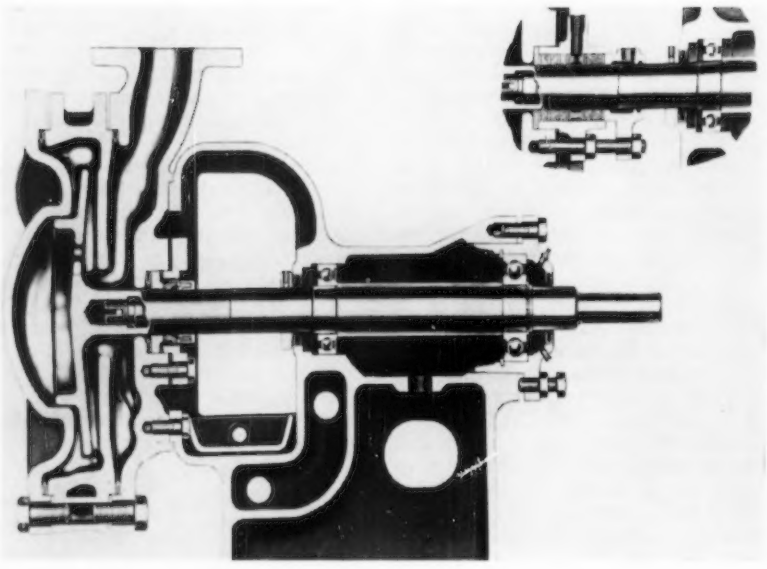
Special student reports were given by Howard Ditmyer, sponsored by the Gardner Board and Carton Co., and Donald L. Rosen, sponsored by Gottesman and Co.

Vice-President Faunce told the papermen that, despite its growth, WMU is concerned with the welfare of its students and is determined to maintain a close relationship with them as individuals.

Concluding the afternoon's program was a panel discussion of faculty members of the Paper Technology Department, conducted by Dr. George F. Kohrman, dean of the School of Applied Arts and Sciences. The moderator introduced the panel with a talk in which he pointed out that the Paper Technology Department is concerned with developing production, marketing, technical and research people.

BERT H. COOPER, vice-president of Kalamazoo Paper Co., (center) is congratulated by Dr. Alfred Nadelman, head of Western Michigan's Paper Technology Department, left, and Dr. Paul V. Sangren, president of the university, on his work as chairman of the Advisory Committee on Paper Technology.

NEW EQUIPMENT AND SUPPLIES



Glassed Pump for Corrosive Service

An unusual pump for corrosive services has been developed jointly by the Phaudler Co. and Goulds Pumps, Inc. From the standpoint of design, Goulds has built a centrifugal pump for long and dependable service; the Phaudler Co. has contributed their glass-to-steel bonding process which permits handling of a variety of corrosive fluids.

Three piece construction of the pump facilitates the use of glass on surfaces which come in contact with the liquid being pumped. The casing, suction piece, and casting cover are individual parts sealed with Teflon gaskets and assembled with bolts. All inner surfaces of the pump are reported covered with glass. Thus, full corrosion resistance is said to result with all organic and inorganic acids (except hydrofluoric), and with all alkalis up to pH 12 at 212 deg. F. In addition to overcoming corrosion problems, the glassed metal pump is reported to have a number of outstanding hydraulic advantages. Flow qualities are claimed improved and cleaning is reported simplified. Glass is said to eliminate adherance of the product being pumped to the interior of the pump. Many polomers, particularly plastics and synthetic rubbers, will cling to metal surfaces, but not to glass.

Further information is available from Goulds Pumps, Inc., 29 Black Brook Road, Seneca Falls, N. Y.

Belt Driven Duct Fan

A new belt driven duct fan, designed to operate under corrosive atmospheres and extreme temperature ranges, has been developed by the Chicago Blower Corp., Franklin Park, Ill.

The model, type "BD", incorporates a new concept in blade design which produces a higher pressure characteristic while reducing noise to a minimum. Shaped like an airplane wing, this Axial Airfoil blade insures a complete air pattern.

Suitable for operating in surroundings such as acid fumes, explosive vapors, dust and gases, the "BD" is capable of handling temperatures up to 150 degrees F. Special models are available to increase the temperature range to 650 degrees F.

The bearings of the "BD" are mounted inside the air-insulated belt housing enabling the motor, which is located out of the air stream, to be positioned either horizontally or vertically.

Constructed of rolled heavy guage steel plate, the fan is continuously welded at points of junction with angle iron flanges, jig punched and stitch welded to drum at both ends.

With either 2, 4, 6, or 8 bladed steel or aluminum wheels, depending upon individual specifications, the "BD" is available in sizes from 12" to 72".

Braze Welding Flux in Squeeze Bottle

Formulated for cast iron, steel, brass and bronze, braze welding, liquid Atmos #1 Flux is packaged in a convenient polyethelene squeeze bottle. Controlled viscosity of the product permits dispensing by merely squirting the exact amount needed directly onto the joint area. This not only saves time but eliminates unnecessary waste.

The flux is chemically balanced so that it is expended during welding leaving virtually no residue to be cleaned away. Self residue removal minimizes need for extensive flux neutralizing where metal surfaces must be painted or otherwise finished. A quick hot water bath is recommended as the only step needed before final finishing. For additional information with Technical Information Service, Eutectic Welding Alloys Corp., 40-40 172nd St., Flushing, L. I., N. Y.

PVC Drainage Systems Handle Corrosive Wastes

Alpha Plastics Inc., Livingston, N. J., has announced the availability of polyvinyl chloride pipe and fittings for complete PVC drainage systems to handle corrosive liquid wastes. PVC drainage systems are reported more economical and easier to install than the cast iron, high silicon iron, or ceramic lines which they replace.

The pipe, Schedule 40 IPS, is available in standard lengths of 10 and 20 feet, and in nominal sizes of 1½ to 4 inches. Molded socket-type fittings come in a variety of styles and sizes.

PAPER PEOPLE

John E. Ray III, whose appointment as resident manager of Union Bag-Camp Paper Corp.'s Franklin, Va., plant, was announced in Paper Trade Journal last week.

TAPPI Adds Field

James W. Field has joined the TAPPI head office organization as a technical assistant in the Technical Division. Mr. Field was formerly employed in the Technical Department of West Virginia Pulp & Paper Co., Tyrone, Pa.

George Abel to Direct Owens-Illinois Forestry

George W. Abel has been appointed director of technical forestry for the Mill Division of Owens-Illinois Glass Co. His headquarters will be in the company's general offices in Toledo.

A forester and forest economist since 1937, Mr. Abel came to Owens-Illinois from St. Regis Paper Co., where he had been director of forest engineering in Jacksonville, Fla. since 1951.

As technical forestry director, he will supervise technical phases of management on Owens-Illinois' timberlands in Wisconsin, Michigan, Georgia, Florida, and the Bahamas. He will be responsible for experimental work in the woodlands, growth studies, and for a perpetual inventory of the timberlands.

Before his employment with St. Regis Paper Co., which began in 1948, he was a forest economist and assistant professor at the University of Arkansas, and a management research forester at the Southern Forest Experiment Station of the U. S. Forest Service at State College, Miss.

Gordon Grannis

Public Relations Ass't At Crown Zellerbach

Gordon Grannis has joined Crown Zellerbach Corp. as public relations assistant at the San Francisco headquarters. He was formerly advertising, publicity and promotion manager for television station KOVR in San Francisco.

His ten years of experience in the radio and television broadcasting field include six years as San Francisco publicity, advertising and promotion manager for the American Broadcasting Co.

Among his duties at Crown Zellerbach Mr. Grannis will handle publications and radio and TV liaison work.

Bachelder Succeeds Watt At Coosa River

Philip A. Bachelder has been elected vice president and secretary, and a member of the Board of Coosa River Newsprint Co., succeeding Ralph M. Watt whose retirement was announced in last week's issue of Paper Trade Journal.

H. L. Lusby Takes Job With Champion at Canton

H. L. Lusby has become associated with Champion Paper & Fibre Co.'s Carolina Division as a special assistant to the superintendent of paper and board manufacturing. Mr. Lusby, who has extensive experience with high-speed paper machines of the type of the new No. 20 machine now being installed at the Canton, N. C., mill, was formerly with Potlatch Forests, Inc., Lewistown, Idaho, as the firm's paper mill superintendent. His career includes affiliations with a number of large mills.

Sutherland's Glen Graham To Retire September 1

Glen Graham, vice president in charge of production at Sutherland Paper Co., Kalamazoo, Mich., has indicated his desire to retire September 1, after 17 years service.

In addition to manufacturing operations, Mr. Graham has carried the responsibility for power plants and for purchasing, traffic and planning departments.

Mr. Graham has been making plans for his retirement for some time and has interests in the South which he has developed with retirement in mind.

Mr. Graham joined Sutherland as vice president in May, 1940. He formerly was associated with the Eddy Paper Co. at Three Rivers, Mich.

He joined Eddy Paper in 1933 after serving as secretary-treasurer and plant manager for the Bogota Paper and Board Co.

Hammermill Promotes Two

Robert B. Turk has been named technical coordinator in the pulp mill division and Max D. Leavy has been appointed junior engineer in the engineering department of Hammermill Paper Co.

Mr. Turk replaces Karl Vogel, who last month was promoted to assistant superintendent of the pulp mill; while Mr. Leavy moves into a newly created position in engineering.

Mr. Turk came to Hammermill as a member of the laboratory in 1950. As technical coordinator, he will be responsible for project development work in the pulp mill.

Stocker Heads W. Mich. Advisory Committee

Dwight L. Stocker, president of the KVP Co., Parchment, has assumed the chairmanship of the advisory committee on paper technology at Western Michigan University.

He succeeds Bert H. Cooper, vice president of the Kalamazoo Paper Co., who retired after two years as chairman, during which time the new Paper Industry Laboratories were constructed and put into operation.

L. C. Nicholson, vice-president of the W. C. Hamilton Co., Plainwell, is the new vice-chairman, and Dr. A. H. Nadelman, head of the paper technology department, continues as secretary.

Joining the committee is James Wise, president of the Kalamazoo Paper Co. Certificates of appreciation for their services on the committee have been given Frederick Fischer, D. H. Greene and Mr. Cooper.

R. P. Wollenberg

Dan B. Phillips

W. Q. Reiniger

Longview Fibre Makes Seven Promotions

R. P. Wollenberg, vice-president, operations, Longview Fibre Co., has announced the promotion of **Dan B. Phillips,** manager of the firm's Oakland, Calif. box plant, to manager of container operations for Longview Fibre Co. Mr. Phillips succeeds **R. P. Wollenberg,** who recently became vice-president, operations.

W. Q. Reiniger, manager of the company's box plant in Seattle, Wash. will become manager of Fibre's Oakland, Calif. box plant.

John W. Clarke will move up from superintendent of the Seattle box plant to manager of that plant.

Chesley M. Croco, tour foreman in the Longview box plant, will become superintendent of the Seattle plant.

John F. Hart, container development engineer at Longview, will become manager of container plants at Longview. Mr. Hart will manage both the box plant and bag plant there.

H. William Freed, assistant manager of timber and log division, has been promoted to manager of the timber division, and succeeds Arnold H. Brandis who retired on June 1, 1957.

Mr. Phillips joined Longview as an office boy and sample clerk in December, 1931. He did various clerking jobs until 1933, when he became assistant box order clerk. In 1939, Mr. Phillips joined the sales division with headquarters in Seattle. He returned to Longview in 1940 as resident salesman, and resigned later that year and left the area to broaden his experience. He rejoined the company in 1946 as a foreman, and was transferred to Los Angeles in 1948 as superintendent of the box plant. In 1955, he became manager of the Oakland plant.

Mr. Reiniger joined Longview in August, 1931, as a clerk in the box order department and was promoted to assistant chief accountant in February, 1934. He became container division office manager at the Longview plant

John W. Clarke

Chesley M. Croco

John F. Hart

H. William Freed

Alvin H. Johnson & Co.

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in 1953, and was transferred to Seattle as manager of the Seattle box plant in 1955.

Mr. Clarke began his employment with the firm as a woodhandler in the pulp division in 1941. He carried out a variety of jobs with the control department before being moved to the Longview box plant as a foreman in 1944. He was promoted to superintendent of the new box plant in Seattle in 1955.

Mr. Croco began work with the company as a laborer in the box plant at Longview in June, 1938, and four years later was promoted to foreman. In 1946, he was boosted to tour foreman and has carried that responsibility until his current promotion to superintendent of the Seattle box plant.

Mr. Hart joined the firm as a laboratory assistant in 1936, and was promoted to assistant chief chemist in 1942. In 1944, he was boosted to supervisor of control laboratories and in 1946 he became technical superintendent. In 1952, he was promoted to container development engineer. He has been active in TAPPI and has been national chairman of the Liner Sub-Committee of the raw materials committee.

Mr. Freed came to Longview in 1945, as a log engineer. In 1948, he became forest engineer and in 1951, he was promoted to assistant manager timber and log division of the company.

Fraser Honors Veteran

A. C. Heckman, left, industrial engineer with Fraser Paper, Ltd., Madawaska, Maine, recently received an inscribed gold watch marking his 25 years service with the company from J. W. D. Hierlihy, mill manager. He also received a letter from Aubrey Crabtree, president of the company, expressing the appreciation of the directors and officers for his quarter century of service. Mr. Heckman graduated from the University of Maine as a mechanical engineer and joined Fraser Paper, Ltd., in 1932.

Dexter Freake Promoted At Corner Brook

Bowater's Newfoundland Pulp & Paper Mills Ltd. at Corner Brook has appointed Dexter Freake as assistant paper mill superintendent.

In addition to regular paper mill operating supervisor, Mr. Freake is responsible to the superintendent for administration of the department and handling of personnel matters.

New Secretary and Treasurer For 3-M

Robert H. Tucker has been elected secretary of Minnesota Mining & Manufacturing Co., and Irwin H. Hansen has been named treasurer. Mr. Tucker succeeds John L. Connolly, who has reached retirement age, and Mr. Hansen succeeds Clarence M. King, who is also retiring.

New Gen. Supt. at Stevens

The Stevens Paper Mills has named Donald F. Drake to replace Raymond J. West as general superintendent of the firm's two mills in Westfield and one in South Hadley, Mass.

Mr. Drake formerly was laboratory director and assistant superintendent.

Harold L. Drake, brother of the new general superintendent, has been advanced from office manager to charge of personnel and administration.

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Kalamazoo TANK & SILO CO. KALAMAZOO MICHIGAN

NEWS OF SUPPLIERS

Sandwell International Ltd., Vancouver, B. C., has acquired all of the shares of Hanright & Co. Ltd., St. Catharines, Ont.

Under the agreement, R. A. Hanright will continue as president of the Hanright firm and he has been appointed a vice-president of Sandwell International. Peter J. Vakomies of Vancouver becomes a vice-president of Sandwell as does Gerald Penney of Vancouver.

Hanright & Co. Ltd., consulting engineers in the thermal power field, have a branch office in Regina. The present Montreal office of Sandwell International Ltd. will be consolidated in St. Catharines under the direction of R. A. Hanright.

Jefferson Chemical Co. has named R. M. Roach New York district sales manager. R. J. Robinson is being transferred from Cleveland to the New York office and J. M. Luger is moving from Houston to Cleveland to take over the territory previously handled by Mr. Robinson.

Mr. Roach joined Jefferson's New York sales staff in 1953, and replaces George H. Kahl, who has resigned.

Mr. Robinson has been resident salesman in Jefferson's Cleveland office and Mr. Luger has been on the sales staff at the company's Houston office.

Corn Products Refining Co.'s new corporate symbol is accepted by William T. Brady, president of Corn Products, (left), from Harley Earl, head of the industrial design firm which created the trademark.

The new emblem, which represents the Corn Products family of 20 consumer and 450 industrial products, carries the calligraphic "CP" in red within a circular golden yellow frame of perfect corn kernels.

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Emulsoflex Waxes are blends of high melting-point, microcrystalline waxes and wax-soluble emulsifiers. They assure uniform, non-fugitive sizing, have no effect on the physical properties of the finished sheet, and markedly reduce "percentage drop" on mullen test. They increase water and grease resistance of molded pulp products. They'll improve your products, save you money! Write today for further information.

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Paraffin Waxes • Microcrystalline Waxes • Parafflex Waxes • Nicolmelt Hot Melts • Laminants & Coatings for the Paper & Packaging Industries

Bristol's New Houston Factory and Repair Lab.

Bristol Co. recently opened a new branch factory and repair laboratory in Houston, Texas. The new facility, at 3617 W. Alabama, will be under the management of E. A. Merwin, Bristol's district manager in the Houston area since 1945.

United States Rubber Co. has appointed William R. Tise Western belting engineer for its conveyor and elevator belting department. His new assignment will combine technical sales and engineering service in the 11 western states. He will make his headquarters in the Los Angeles branch office.

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Process Studies, Design, Specifications and Construction Supervision

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Atlas Powder Co., Wilmington, Del., has elected Preston W. Parvis, secretary and treasurer of the company, a director. He succeeds William J. Wiley, who has resigned as a director and financial vice president.

D. J. Carroll Copps and Edward J. Goett, vice presidents, were designated senior vice presidents.

Robert J. Reilly, director of the company's economic evaluation department, was also elected an assistant treasurer.

John H. Leary was named assistant to the president. He previously had been assistant to the financial vice president.

Alexander Fleck, Ltd., on June 21, has moved its offices from their present location, where it has been doing business since 1842, to new premises. The Production Department will be moved to the new location during the holiday period, July 20 to August 6.

Tracerlab, Inc. has elected Homer S. Myers to the newly created post of vice-president for marketing. Mr. Myers was one of the founders of the firm and has been general manager of its Industrial Division.

Figures of the Week

PAPER PRODUCTION RATIO REPORT—American Paper & Pulp Ass'n. Figures

(Production as percent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

	May 11	May 18	May 25	June 1	June 8
1957	94.8	95.1	93.9	89.8r	92.7
	May 12	May 19	May 26	June 2	June 9
1956	102.8	100.3	101.9	99.6	101.2

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar	Apr	May	June	July	Aug	Sept.	Oct.	Nov.	Dec.	Year Avg.
1957	94.1‡	96.5‡	96.3‡	93.0‡	93.6‡								
1956	99.6	102.6	102.9	102.5	101.8	99.9	85.6	96.7	94.3	99.5	97.6	90.9	97.9

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1950	1951	1952	1953	1954	1955	1956	1957
Year to Date	95.6	101.8	94.0	94.2	93.6	95.9	101.4	94.8
Year Average	95.8	98.0	88.6	92.3	91.6	94.9	97.9	

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

Note: In the above tables all the ratios shown are on the basis of a normal 6 and 7 day capacity.

PAPERBOARD OPERATING RATIOS†

COMPARATIVE WEEKLY SUMMARIES

	May 11	May 18	May 25	June 1	June 8
1957	95	95	95	88	86
	May 12	May 19	May 26	June 2	June 9
1956	99	97	99	91	97

COMPARATIVE MONTHLY SUMMARIES

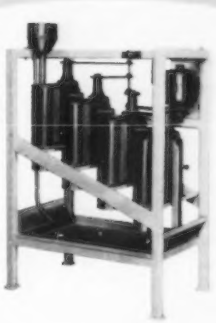
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1957	91	94	94	92	93								
1956	100	100	99	100	99	98	77	95	89	96	93	84	94

† *Percents of operation based on "Inch-Hours" reported on a 6-day basis to the National Paperboard Association.*

SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Ass'n. Figures

ITEM	THIS WEEK ENDING June 8, 1957	LAST WEEK ENDING June 1, 1957	CUMULATIVE TO DATE Jan. 1 to June 8, 1957
% Activity	86%	88%	93%
	Tons	*Tons*	*Tons*
Total Production	263,469	261,684	6,229,194
Liner	97,736	96,972	2,145,172
Corrugating Material	39,845	35,653	942,215
Chip & Filler Board	4,334	6,540	123,322
Total Containerboard	141,915	139,165	3,210,719
Folding	45,288	48,290	1,157,094
Set-Up	10,491	10,803	258,403
Special Food Board	25,567	21,450	546,768
Other	40,208	41,976	1,056,210
Total Boxboard	121,554	122,519	3,018,475
Total Orders	*Tons*	*Tons*	
Received	323,485	261,409	
Unfilled End of Week	455,338	384,116	

Classify paper fibers accurately



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ALBANY FELT COMPANY

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this Spring by

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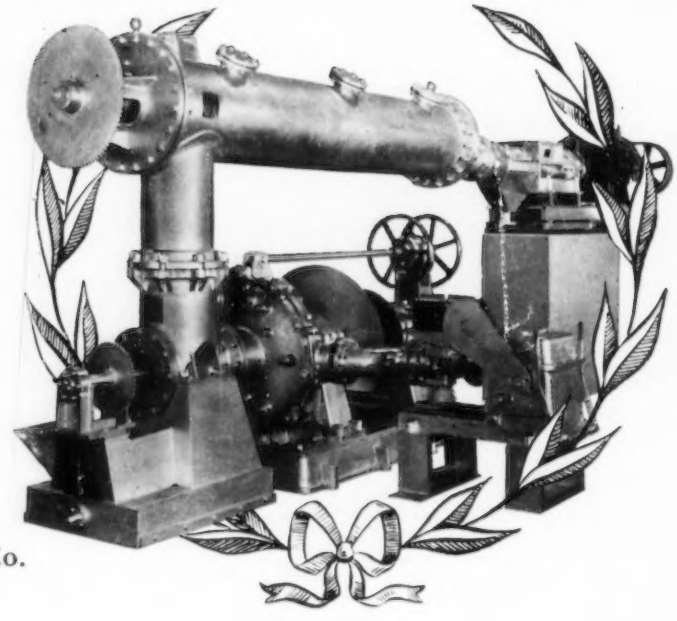
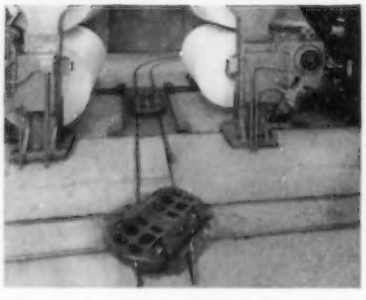


AMERICAN DEFIBRATOR, INC. CHRYSLER BUILDING NEW YORK 17, N. Y. West Coast: A. H. Lundberg Orpheum Building, Seattle, Wash.

Track and Dollies for 3000 lb. Rolls

SAVE TIME AND LABOR



Make roll handling safer and easier with a track system engineered by Dilts. Dollies are floor-loaded —lift truck traffic and crowded aisles are eliminated.

Dollies are mounted on anti-friction bearing rollers. Turntables, transfer tables, straight and curved track sections and switches are available in standard units to handle rolls up to 3000 lbs.

A Dilts engineered system is easy to install and requires no maintenance. Write for Specification Sheet 114.

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Westvaco manufactures a wide range of high quality paper products—from fine printing to rugged converting papers. All of these papers are made from virgin chemical pulps to precise standards of uniformity and quality—Westvaco's guarantee of top performance.

Printing Papers . . . Coated and uncoated letterpress, coated and uncoated offset, and gravure.

Writings . . . Bond, mimeo, duplicating, ledger.

Bristols . . . Index, post card.

Converting Papers . . . Label, tablet, envelope, lining, file folder, tag, tabulating card, coating raw stock.

Bleached Boards . . . Cup, milk bottle, folding boxboard, frozen food container.

Kraft Papers . . . Bag, multiwall sack, envelope, asphalting, impregnating, waxing.

Containerboard . . . Linerboard and corrugating medium.

Market Pulp . . . Bleached and unbleached sulphate.

West Virginia Pulp and Paper Company
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offers complete integrated services to the pulp and paper industry

Successful producers in the world of pulp and paper appreciate the wisdom of employing a single organization capable of handling the multitude of complex problems entailed in the expansion of today's operations. Does the woodland property warrant further exploitation? . . . What returns can be expected? . . . Where should a new plant be built? . . . How much capital would be needed?

Stone & Webster Engineering Corporation is equipped to solve these problems and many others, ranging from water rights and labor supply to financial and tax agreements.

When the time comes for engineering design and drafting, procurement of materials, site preparation and final construction, Stone & Webster experience and working knowledge of all phases of your operation assure you that each requirement will be satisfied efficiently, economically, and expeditiously.

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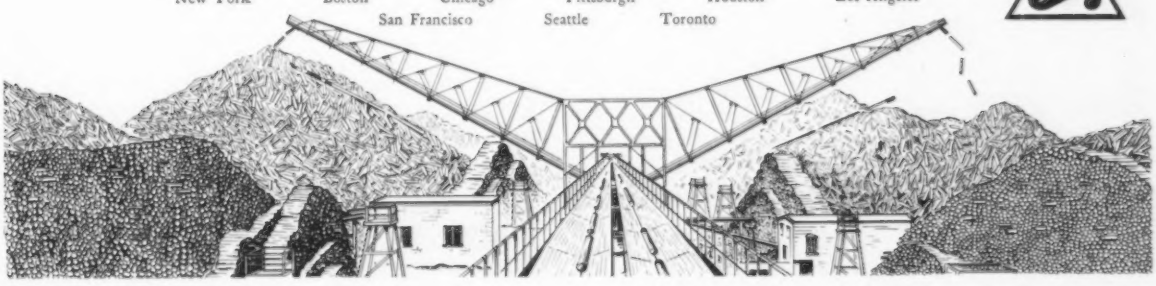

New

TAYLOR-STILES RAG CUTTER

CUTS 15,000 TO 25,000 LBS. OF RAGS AN HOUR WITHOUT JAMMING!

Taylor-Stiles new Bale Opener Feeder opens bales of rags at the rate of 15,000 to 25,000 lbs. an hour. This new Taylor-Stiles Cutter will cut this volume of rags without jamming.

The rags, opened and spread out, are dropped onto the feed conveyor of the cutter or they may be dropped onto a sorting apron and then to the cutter feed.

At each end of the feed roll of this new rag cutter, flutes are joined by a plate inclined toward center of feed. This overcomes any tendency of the rags to disperse outwardly. This feature, combined with enlarged space between cutting element and frame practically assures that no jamming will occur between the cutting element and the frame.

Jams, at times, do occur at the end of the feed apron due to strings, foreign matter, and other causes not related directly to the machine. The feed motor is equipped with a reversing switch which will generally clear such jams.

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Chemists for mills and for demonstrating and selling; electrical engineer; master mechanics; plant engineers; time study-industrial engineers; salesmen to sell paper, also mechanical equipment, chemicals and adhesives; Cylinder and Fourdrinier tour bosses.

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PAPER MILL EQUIPMENT

28 to 35 with mill experience. Introduction New Equipment. Send resume. Address Box 57-150 care Paper Trade Journal.

JI-1

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PERSONNEL DEPARTMENT
RIEGEL PAPER CORPORATION
CAROLINA DIVISION
ACME, NORTH CAROLINA

JI-8

DIVISIONAL WOODS SUPERINTENDENT

Wanted for pulpwood and saw log operations and to assist in timberland management in the State of Maine. Experience necessary with Forestry training preferred. Must speak fluent French and English. Write Box 57-162 care Paper Trade Journal, giving full particulars, including experience and references. J-1

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$5,000 to $50,000

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Top mills, converters, and jobbers from Coast to Coast badly need qualified men at every level. Choice spots open in pulp, board, coarse, fine, folding, corrugated multi-wall bags, transparent packaging and paper specialties of all kinds.

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Opportunity with large paper company having plants throughout the United States, executive office in New York City. Experience in labor relations, preferably paper industry. Legal knowledge and experience preferred, but not necessary. Salary open for discussion. Address Box 57-136 care Paper Trade Journal.

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1—52" 5-color Kidder Master Aniliner Model 5FR6.
1—42"—4 color Cottrell-Heinrich Flexo, press on 6-color frame, suitable for cellophane
1—48" 6-color Hesrich-Cottrell Press. 4-Flexo—2 Rotogravure.
1—36" Manhasset Anilox, 2-color on a 3-color frame. Slitting & punching attachments.
1—22" 4-Color Chambon Press—Size #2G
1—2-Color #4 Keese Perfect Seal press
1—10" 1-color Gravure press, 2 color frame.

POWER PAPER CUTTERS

Seybolds: 84" mill type (12Z), 64" Precision; 56", 50" & 40"—10Z; 84", 56"—Daytons; 60", 44"—20th Century; 34"—Holyoke. Sheridan: 36" new model. Oswego: 44", 38" & 34".

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1—92" Model 18
1—72" Type 10-11
2—50" Type 40-4B for bandaging etc.
1—42" and 1—62" Type 6
1—42" Type 9-5-A Roller Bearing 1500 fpm.
1—42" Type 10-5A, 30" rewind 1500 fpm.
1—42" Type 24-2A
1—52" and 1—42" Type 24-7 for cellophane

OTHER SLITTERS

1—90" Kidder Superspeed 40" Rewind
1—84" Waldron Double-Drum, Shear-Cut, 50" Max. Rewind.
1—62" Johnstone Model 12 Score-cut
2—40" Model B Fales Shear-Cut Slitters
2—24" & 1—36" Kidder Model S.L. Shear-cut

MISCELLANEOUS MACHINES

3—Inman Mfg. Co.'s Book Match Box & cover making machines
1—24" Waldron Reverse Coater
1—#10 & 1—#14 Mitts & Merrill "Air Fluff" Paper Shredder.
Schultz Automatic Roll machines, 12", 18" & 24" wide.
1—Knowlton Tube Winder with re-Cutter.
1—Brightwood Box machine for 12" wide household waxed rolls.
1—Continuous Feed Metal Edging machine
1—Beck Sheeter: 36" CCSH.
1—Beck Sheeter, 45" wide Model C.S.H.
1—Dietz Twin Type Towel Interfolder
1—Model "A" Junior Lawtomatic Toilet Roll Wrapping Machines
2—81" Dietz Standard Toilet Paper Converters
1—Weber, Model 2 CN Cellophane Bag Machine
1—Potdevin Model 372 Cellophane Bag Machine—makes both satchel bottom and flat and square bags.
4—Roto PO-2 Bag machines
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1—84" wide Late type Potdevin Squeeze Roll Waxing machine.
Die presses, 1—50" x 22", 4 Post Sheridan, 1—38" x 24" Type UA—, 1—60" x 26", 2—17" x 42" Seybolds.
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1—48" Hudson Sharp Embosser-tinter.
1—Hudson-Sharp 13½" x 13½" napkin folder with 3 color printing and embossing attachments.
1—Paper Converting Machine Co.'s 20"—1/8 fold facial napkin folder
1—Single & 1 Double fold Paper Converting Interfold toilet machines.
1—Paper Converting Machine Co.'s ¼ Fold Napkin Machines. 1-2 web & 2-3 web.
2—2 web P.C. Machine Co.'s Napkin Folders. Dispenser Type.
2—3 web ¼ fold Paper Converting Machine Co.'s Napkin Folded Jr. Model Dispenser Type.
1—30" Peter's Cellophane sheeter
4—Hamblet Sheeters, 42", 54", 84" & 100"
1—84" wide Hamblet sheeter, model #28, Roller bearing type—Equipped with 84" Hamblet single folder
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1—60 Black-Clawson 3 ply board or paper laminator

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Write Don Lindert, Industrial Relations Dept., Minnesota & Ontario Paper Company, 500 Investors Bldg., Mpls. 2, Minnesota. J-8

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EXECUTIVE-WORKS MANAGER — Superior record in production organization, labor relations and development of new products in boards, papers and conversion. Seeking organization offering challenging opportunity. Diversified lines. Employed. Address Box 57-78 care Paper Trade Journal. J-24

FOREMAN—Twenty Five years experience in converting departments—have operated rotogravure presses, have laminated and waxed paper for all purpose including foil. Skilled operator on all machines pertaining to converting. Have no difficulty in handling help to get the best results. Address Box 57-154 care Paper Trade Journal. J-24

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AVAILABLE FOR 4 MONTHS DELIVERY 19 NEW DRYERS, WITH OR WITHOUT ROPE CARRIER GROOVES, 60 INCH DIAMETER BY 134 INCH FACE OF CLOSE GRAINED IRON DESIGNED FOR 50 PSI WORKING PRESSURE; OR FOR SIX MONTHS DELIVERY COMPLETE 134 INCH FACE DRYER SECTION WITH FRAMING GEARS AND BEARINGS. ADDRESS BOX 57-155 CARE PAPER TRADE JOURNAL. J1-8

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FOR SALE

44" National Automatic Clamp Power Cutter.

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1—145" Holyoke—9 roll Saper Calender Stack.

1—66" Holyoke—9 roll Super Calender Stack.

1—80" Pusey & Jones—11 roll Calender Stack.

1—30" x 160" Farrel-Birmingham Roll Grinder. Factory rebuilt in 1954 at a cost of $18,500.00. New drives and latest type of equipment.

27—48" x 110" Bagley & Sewall Dryers.

21—48" x 82" Pusey & Jones Dryers.

6—48" x 88" Bagley & Sewall After Dryers.

1—120" Pusey & Jones 2-Drum Winder. Anti Friction Bearings.

1—110" Pusey & Jones 2-Drum Winder. Anti Friction Bearings.

7—14 Plate Impco Flat Screens, Bronze Vats, latest type, direct motor drives, S.S. Plates.

1—Waxing Machine, complete with Vilter Refrigeration Equipment and Drives.

1—Hamblet Roller Bearing Cutter—30 roll backstand. Serial No. 2282, Model 28, Fully Equipped.

1—Hamblet Layboy, Serial No. 1140, Fully Equipped.

1—Continuous Feed Metal Edging Machine. (New)

1—Brightwood Box Machine, 6" Model Automatic Rotary Feed, End Shredder (60 per minute), Complete.

1—Hudson Sharpe Wax Paper Converter, Serial No. 1507, Fully Equipped, trim 72".

1—84" Kamyr Machine Complete, 75 Ton per day.

1—25" Dia. x 156" Suction Couch Roll.

2—22" Dia. x 156" Rubber Covered Press Rolls.

2—84" Bagley & Sewall Wet Machines.

1—No. 2 Jones Pulper, Anti Friction Bearings. Spare Worm.

1—Cowls Hydraslusher Model 10 SD.

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1—Valley Iron Works—750 lbs.—Iron Tub.

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1—Black Clawson 90" 7 roll.
1—Lobdell 86"—5 roll.
1—Farrell 6 roll 88" face—heavy duty.
1—Farrell 5 roll 88" face—heavy duty.
1—Farrell 152"—frames for 11 rolls with 5 rolls.
1—Sandy Hill 84" 7 roll, with doctors.
1—Farrell 128" 7 roll, complete.

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1—Dilts Classifiner w/spare discs.

CONVERTING MACHINERY

2—Hobbs 24" x 38" Die Presses.
1—Seybold Duplex 7" x 36" Die Press.
1—National Model AS Auto. Metal Edger w/1 h.p. motor.
1—Hudson Sharp Model GL-2, 2 ply Laminator.

CYLINDER MOULDS

1— 72" face x 48" dia.
1— 92" face x 30" dia.
1—102" face x 36" dia.
3— 73" face x 48" dia.
2—104" face x 36" dia.
1—136" face x 54" dia.—s.s. covering.

CYLINDER WET END

1—Shartle 120" trim, 7 cyl. wet end. 1 cyl. 42" dia. & 6 cyl. 36" dia. Complete w/counter flow vats, couches, etc. Also 4 complete primary presses.

DRIVES

46—Enclosed Rt. angle and parallel Reeves, PIV etc. 2 h.p.-150 h.p.

DRYERS—Hydrostatically Tested

2—42" face x 36" dia.
2—44" face x 36" dia.
2—46" face x 16" dia. and accessories.
2—46" face x 36" dia.
40—46" face x 24" dia. and accessories.
58—46" face x 48" dia. and accessories.
1—67" face x 36" dia.
1—68" face x 36" dia.
8—72" x 36" anti-friction bearings.
2—70" face x 36" dia.
3—76" face x 36" diameter with gears.
10—80" face x 48" dia. with gears and bearings.
1—82" face x 48" dia. Gears & Bearings.
2—84" face x 28" dia.
1—84" face x 36" dia.
2—88" face x 36" dia.
5—88" face x 48" dia. with accessories.
13—90" face x 48" dia. with accessories.
1—90" face x 18" dia. with A-F bearings.
1—104" face x 36" dia.
1—104" face x 48" dia.
1—110" face x 42" dia.
7—120" face x 48" dia. with rope carriers.
1—120" face x 42" dia.
1—124" face x 48" dia.
1—126" face x 48" dia.
13—127" face x 42" dia.
1—130" face x 48" dia.
1—138" face x 36" diameter.
2—160" face x 28" dia. with rope carriers.
10—160" face x 36" dia.
1—160" face x 42" dia.
14—160" face x 48" dia.

EMBOSSERS

1—80" Hudson Sharp 2 roll anti friction bearing equipped. Complete from double unwind through double rewind. Including drives.

FILTERS

1—Oliver Continuous Filter, Cylinder 8' Diameter x 10' Face, Steel Vat.

FLAT SCREENS

1—Bird Jonsson S.S. Screen, with 2 h.p. motor.
1—IMPCO 10 plate—Dunbar drive, bronze vat.
6—Murray 12 plate A.F. Brgs.
1—12 plate Sandy Hill, roller shoe.

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1—86" Machine Complete. Wire 86" x 68 ft. —10". 2 press sections. 23 Dryers 48" dia., Cal. Stacks, Pope Reel, 2 drum winder, complete drives. Operated 415 f.p.m.

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JORDANS

1—E. D. Jones pony Jordans S.S. Filling.
2—E. D. Jones standard Jordans. A.F. bearing.
1—S.&W. with granite filling.
1—Appleton #2—anti friction bearings.
1—E. D. Jones #4 (Imperial) with A.F. Brgs.
1—Shartle Miami #2 with A. F. Bearings.

LABORATORY EQUIPMENT

Valley Iron Works Pulp Test Equipment. Consisting of couch roll, sheet mold, hydraulic Press, hot plate with boiler. Like new.

MOTORS

12—125 H.P. Westinghouse synchronous enclosed. Brand new. 440 volt, 720 rpm.
1—West. 300 h.p., 388 r.p.m., 440/3/60.
1—G.E. 350 h.p. syn. 3/60/2200—720 r.p.m.
4—G.E. 150 h.p. 3/60/440—435 r.p.m.
3—G.E. 100 h.p. 3/60/440—435 r.p.m.
1—G.E. 100 h.p. 3/60/440—695 r.p.m.

PULP EQUIPMENT

1—Jones Pulp Screen, cylinder 40" dia. x 83".
3—2 ft. x 8 ft. Tyler Niagara Chip Screens.

PUMPS

44—Centrifugal Pumps open & closed impellers.

REELS

1—Pusey & Jones 162" drum reel.
1—138" English Drum Reel.
1—Waldron 86" automatic Pope Reel with DC motor drive. Operates 1000 fpm. New 1948.

REFINERS

2—Bauer double disc Model 185C, w/2-75 h.p. motors each.
1—24" Downingtown Weiner Refiner. New.
1—34" Sutherland Disc Refiner. S.S. discs.

ROLL GRINDER

1—Farrell-Birmingham, complete with crowning device and motor drive. For rolls 30" x 160" max.

ROLLS—PRESS, COUCH, CALENDER, etc.

350 Miscellaneous Rolls. Inquiries invited.
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1—Bird #6 Savealls, complete with couches.
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SHEETERS

1—Hamblet 46" Single knife.
1—Hamblet 55" with 3 roll backstand.
1—Moore & White 80" with layboy.
1—B-C 80" heavy duty duplex board sheeter, with 6 roll backstand and 2 reeves drives.
1—Hamblet 100" single knife with 3 slitters.
1—Hamblet 110" single knife sheeter.
1—Moore & White simplex 114" sheeter with Maxson Layboy, 8 roll backstand.
1—Cameron 124" quick change double slitter assembly for board sheeters.
1—Beck 54" with layboy and backstand.

SHREDDERS

2—Mitts & Merrill Air Fluff Paper Shredders.
1—Mitts & Merrill #17-2A paper shredder.
2—Taylor Stiles Giant Stock Shredders.

SLITTERS & WINDERS

1—Cameron 42" Model 6.
1—Cameron 62" Model 6—30" rewind.
1—Hudson Sharp 62" Rewinder. 3 spindle.
1—Hudson Sharp 72" high speed auto. Wax Roll and tissue roll converter.
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1—Langston 40"—shear cut.
1—Fales 40"—1" & 1⅛" knife setups.
1—Hudson Sharp 60"—for plastic coated papers.
2—Schultz 12" Coreless rewind.

STEAM JOINTS

40—Shartle Bros. Steam Joints, for 8" journals, operated at 50# steam pressure.

STEAM TURBINES

1—DeLaval 100 h.p. complete including reducer, governor, etc. Ratio 11.66-1.

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4—Brass for 96" wire.

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1—Sandusky 25" dia. x 122" drilled face.
1—Sandusky 18" dia. x 122" drilled face.
1—Sandusky 22" diameter x 135" drilled face.
1—Sandusky 18" diameter x 116" drilled face.
1—Sandusky 94" drilled face x 18" dia.
1—Sandusky 98" drilled face x 18" dia.

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1—Millspaugh 30" dia. x 194" face.

SUPERCALENDERS

1—Norwood 30" 5 roll, with motor drive.
2—Norwood 56" 13 roll Glassine, complete with V.S. Motor drives AF bearings.

TRIMMER-POWER BACK GAUGES

1—Seybold 56" Dayton, with motor.
1—Seybold 84" Dayton with motor.
1—Seybold 74" 20th Century.
1—Seybold 74" 20th Century. Rebuilt.
1—Seybold 45" Model 10Z.

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1—Nash H-5.
2—Nash #6 Hytor.
1—Nash #8 Hytor.

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1—Valley Iron Works—106".
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While we strive for accuracy in preparing the above index which is purely a service to our readers, we cannot be responsible for errors.

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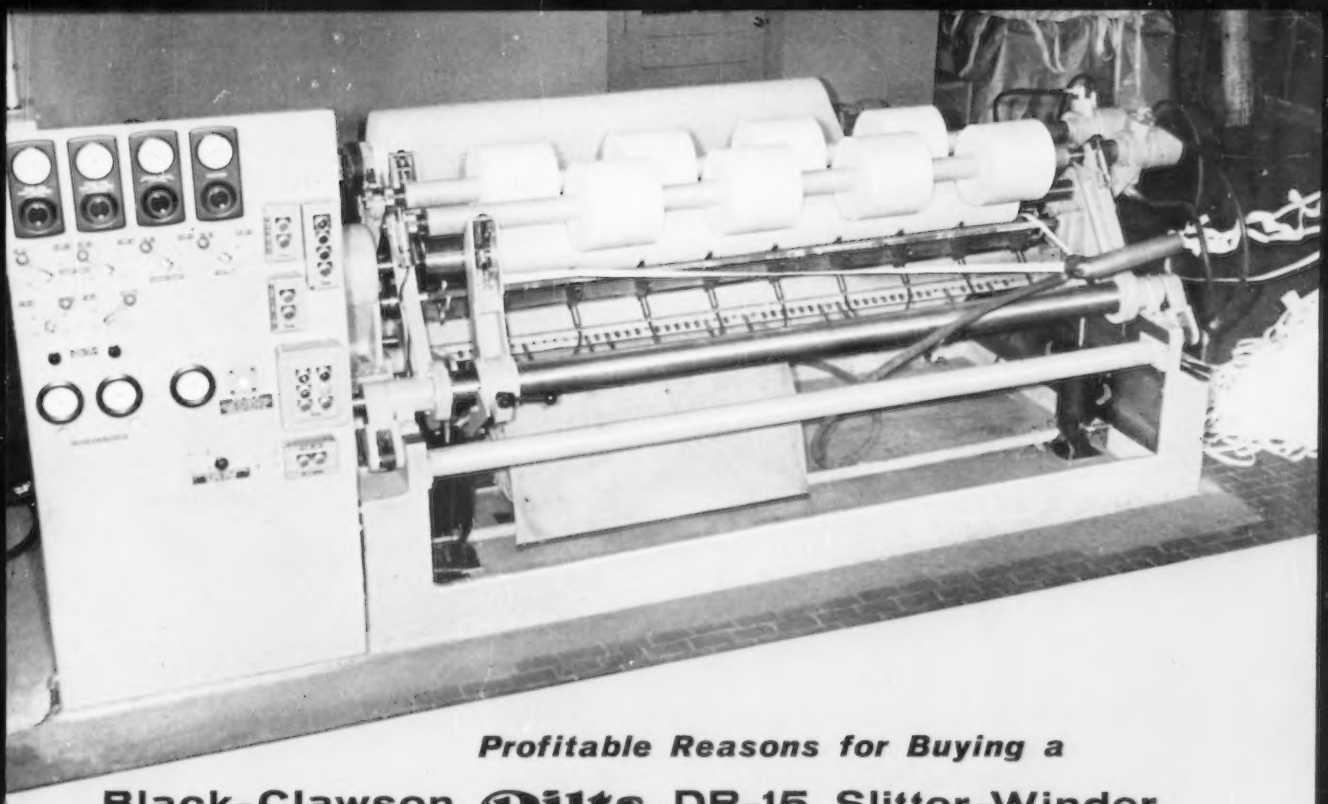

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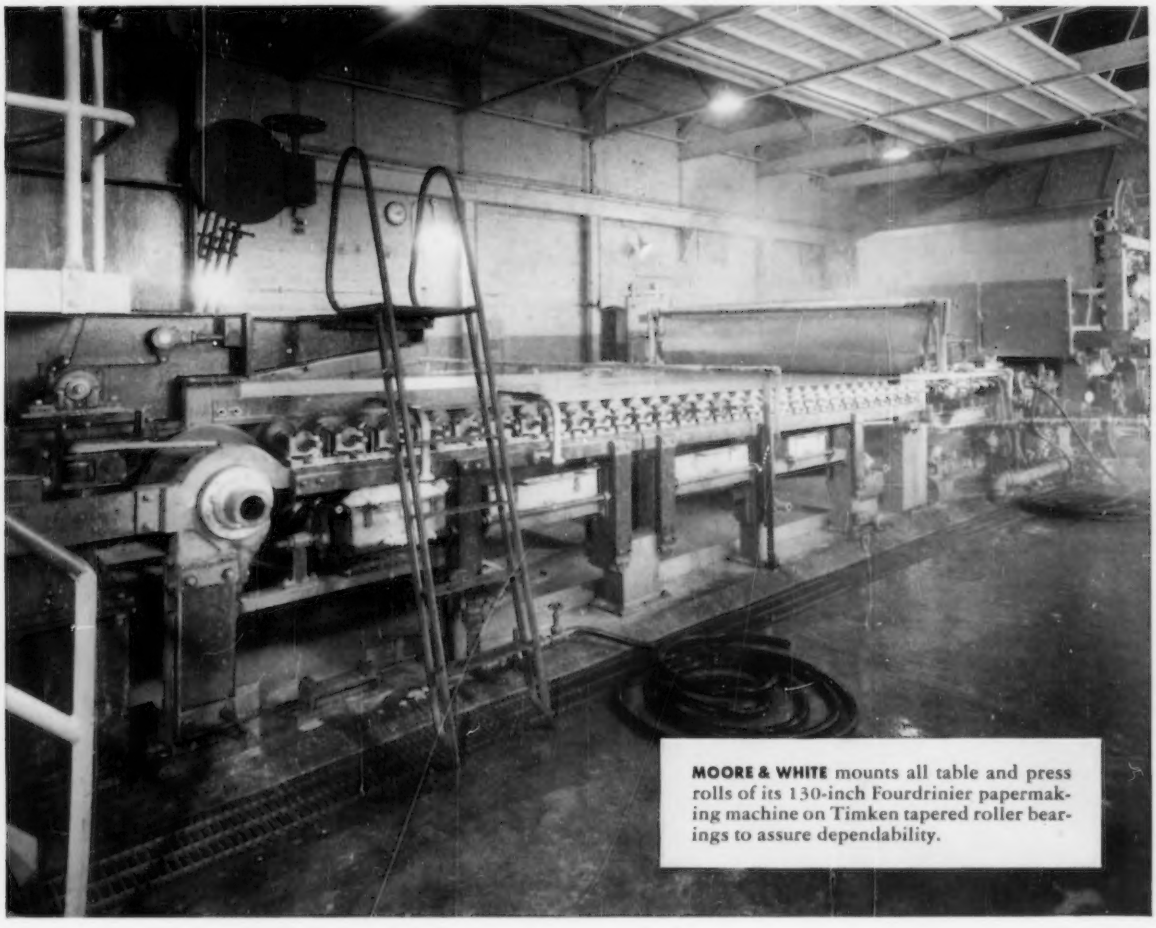

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